

POPULAR Computing WEEKLY

SUGAR TALKS

Page 28

NEWS DESK
BT grabs
Hewson Team
Cascade sues
Microprose
PLUS
Full PCW
Show reports

HARDWARE
Amiga - ST -
Archimedes
3-way clash



SPECIAL
PCW Show Issue

KNIGHT ORC



KNIGHT ORC

Available in August:

AMIGA (Disc) ATARI ST (Disc)

To follow soon:

IBM PC (Disc) MAC (Disc) APPLE II (Disc)

AMSTRAD CPC (Disc) AMSTRAD PCW (Disc)

ALL AT £19.95

CBM 64/128 (Cassette) or Disc

AMSTRAD CPC (Cassette) SPECTRUM (Cassette)

ATARI 800 (Cassette) or Disc MSX (Cassette)

ALL AT £14.95

*Text version only.

At all good retailers or direct from:
RAINBIRD MAILORDER

To order enclose a cheque/PO payable to
BRITISH TELECOM plc stating machine,
cassette or disc, and number required and send to
RAINBIRD MAILORDER, PO BOX 394, LONDON N8.
Or call the RAINBIRD HOTLINE on
01-348 8618

quoting your Access/Visa card number.

Remember, always state your Name, Address and
Postcode including the reference code printed below.

All prices include P&F. Allow 28 days for delivery.



PUBLISHED IN THE UK BY RAINBIRD SOFTWARE
FIRST FLOOR, 74 NEW OXFORD STREET, LONDON, WCA1 3PS
Rainbird and the Rainbird logo are trademarks of
British Telecommunications plc.

Enter the world of Knight Orc.

The latest, most challenging and fun packed three part
adventure from Level 9.

The text is pure Level 9 at their most innovative and
the graphics, well they are superlative; state of the art and
worlds beyond.

You are cast as a desperate, downtrodden, evil minded
Orc on the rampage in adventureland.

For generations the Humans have been persecuting
Orcs, which is hardly surprising as Orcs are singularly
unpleasant creatures.

Now it's time to redress the balance.



With 70 characters to contend with, masses of spells
and puzzles to use and solve, you'll need all your Orcish
cunning if you are to reap your ultimate revenge.

But be warned adventurers, for all is not as it first
appears in ... Knight Orc!

Screen shots taken from the Amiga version.



October 2-8 CONTENTS

POPULAR
Computing
WEEKLY

News

- 4 PCW Show News Desk** BT signs up Hewson's inhouse team... Atari announces transputer and CD-Rom machines... Z88s recalled... and all the rest of the show news.
- 35 Soundcheck** Mark Jenkins with details of music packages for the C64.
- 36 Communications** Steve Gold reveals the latest developments on Micronet as it becomes ever more interactive.



Features

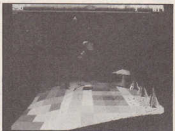
- 22 Battle of the Giants** Duncan Evans with the definitive test - Atari ST, Commodore Amiga, Acorn Archimedes. Watch those letters flood in...
- 28 Alan Sugar Interview** They said it couldn't be done - John Brissenden gets the goods on the PCW9512 and much more besides from Britain's most successful businessman, Amstrad chairman Alan Sugar.



Top: PCW Show, second: Commodore Amiga 500; above: Alan Sugar; below: Zarch.

Programming

- 18 Peek and Poke** Kenn Garroch answers your programming queries.
- 26 Machine Code Graphics** Kenn Garroch begins another series of informative articles.
- 32 Listings** Lack of space means unfortunately only one program for now... more next week.
- 34 Bytes and Pieces** Short routines for you to type in.



Games

- 41 New Releases** Your complete guide to all the programs released this week, including Zarch, Vegas Gambler and Phantasia III...

Executive editor Francis Jago Deputy editor John Brissenden Features editor Cliff Joseph Technical editor Duncan Evans Marketing manager Jeremy Kite
Advertisement manager David Oslen Advertisement executive Athena Paeleman Classified manager Susanah King Classified executive Robert Cole Editorial
secretary Annmarie Allan Managing editor Brendan Gore Publisher Trish Phillips Group Publisher Paul Coster Chief executive Richard Hease Financial director
Brendan McGrath. Published by Focus Magazines, Greencoat House, Francis Street, London SW1P 1DG. Typeset by Magazine Typesetters, 6 Parnell Court,
East Portway, Andover, Hampshire. Printed by McCorquodale Magazines, Andover, Hampshire. Distributed by S M Distribution, London SW9, Tel 01-274
8611, Telex 261643.
© Focus Magazine 1987. ISSN 0265-0509

ABC

How to submit articles Articles which are submitted for publication should not be more than 2000 words long. The articles, and any accompanying programs, should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here - so please do not be tempted. We cannot guarantee to return your programs - so please do not send your only copy. *Accusys* Popular Computing Weekly cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

Popular Computing Weekly. Tel: 01-834 1717.

Games for Plus 3 follow price cut

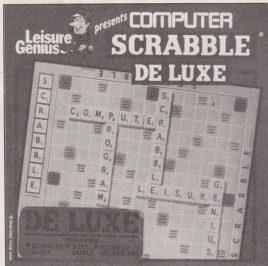
THE SPECTRUM Plus 3 has finally got some disc software. Despite announcements from various companies there have been no games produced specifically for the Plus 3 until now, apart from the games that come bundled with it (which are simply old games on disc).

The first completely finished and playable Plus 3 game to appear at the show was Virgin's upgraded *Scrabble Deluxe*, which even beat the Plus 2 version due to a minor compatibility problem with the Plus 2.

The game features improved graphics, a clock to time your moves, and a larger vocabulary than the original version and is on sale at £15.95.

Kempston Data demonstrated (but weren't selling) their desktop mouse system for the Plus 3, which gives it the sort of WIMP system that is normally associated with more powerful machines, and Tasman announced (but weren't demonstrating) Tasword +3.

The £50 price cut on the Plus



Below: *Scrabble Deluxe* from Virgin

3 seemed to meet with a fair degree of approval, but apart from these titles there was very little talk of producing original

software for the machine, the general attitude of the software houses still being "we'll wait and see how it sells".

Z88 game makes debut

ASSUMING you've got one of the Z88s that can run third party software without being modified, you might be interested in news of the first Z88 game.

Old Scores is a graphic adventure, set in and around the South Bank arts centre in London, which sends you on a search for a missing musical manuscript.

The game comes on ROM cartridge, and uses the Z88's main display for the text input/output, while the 'map' section of the screen contains hi-res graphics of the game's locations.

Old Scores should be available shortly, further information on 01-959 6239.



YES PRIME MINISTER

A week is a long time in an interactive icon-driven environment, where every action can have unexpected consequences.

But with Sir Humphrey and Bernard behind you, how can you go wrong?

Only you can decide....

Britain's premier computer game!

Program by Oxford Digital Enterprises.
Spectrum, Commodore, Amstrad and BBC
Cassette £14.95, Disk £19.95.
Available from W.H. Smiths, Boots and
other leading stockists.



Mosaic Publishing Ltd,
Gorley Firs, South Gorley, Hants SP6 2PS Tel: 0425 57077

Swashbuckled!

The PCW Show provided the setting for a dramatic development last Friday in the dispute between Microprose and Cascade over their games based on pirates.



Similarity, what similarity?

Cascade served a writ for damages on Microprose at the Microprose stand, after Cascade's lawyers had advised the company that recent action taken by Microprose was unlawful, and that as a result "damage has been caused to Cascade Games and its reputation."

Microprose had recently an-

nounced that it was suing Cascade over the packaging for *Pirates of the Barbary Coast*, which it claimed was too similar to the Microprose offering *Pirates*.

No proceedings were subsequently issued, and Cascade is now understood to be claiming substantial damages.

Hewson team goes to BT

ANDREW Braybrook and Steve Turner, collectively known as Graftgold, announced last week that they would no longer be working with Hewson, but that all future releases (including the two currently being promoted) will be under the Telecomsoft banner.

The most immediate result of this dramatic move is that it seems both Hewson and Telecomsoft will be releasing *Morpheus* and *Magnatron*.

A source very close to both Hewson and Telecomsoft suggested that the deal was first suggested less than a week ago, and that both Braybrook and Turner were convinced in only a matter of hours that Telecomsoft could provide a more stable and profitable base than Hewson.

One of the main reasons, it seems, that Graftgold was unhappy with Hewson was the

lack of any sort of formal contract, and so the speculation that Hewson (more specifically US Gold) were considering suing seems open to doubt.

Andrew Braybrook assured *Popular* that he had never signed a contract with Hewson and that he was therefore "surprised" that any legal action was being taken, especially as Andrew Hewson had, at first, seemed quite reasonable about the proposed move.

US Gold's involvement in this dispute seems to have occurred after a marketing and distribution agreement had been agreed between Hewson and Gremlin, part of the US Gold/Centrossoft group.

Apparently Geoff Brown, head of US Gold, was very upset to have lost the chance of using Braybrook and Turner, and suggested that legal action be taken.

MORE SHOW NEWS ON PAGES 6,7,11,& 12

Comic capers

IN addition to all its other marketing deals with the likes of *Starlight*, *Viz Designs*, and even the mildly eccentric *St. Bride's School*, Ariolasoft has tied up the rights to *The Pink Panther*

and *Tom and Jerry* (which must have cost a pretty penny). As the deals have only just been signed they are unlikely to be completed this year.

Capp & US titles for Mirrorsoft

MIRRORSOFT'S autumn releases, announced at the show, include an adventure game based on the Andy Capp cartoon strip (which just happens to be published in the *Daily Mirror*). The aim of the game is to help Andy survive for a week on his dole money, and it is planned for a Christmas release on Amstrad CPCs, C64 and Spectrum.

The company also has extensive links with a number of US software houses, allowing it to tap into a ready-made catalogue of 16-bit titles.

These include *Defender of The Crown*, *King of Chicago*, and *Shadowgate* from Mindscape, as well as titles from FTL Games, Spectrum Holobyte, and British wargame specialists PSS.

Pac-Man latest

PAC-MAN and *Soviet Submarines* are the subjects of Quick-silva's main autumn releases.

The company has tied up the conversion licence for *Pac-Land*, the latest Pac-Man coin-op game, and the software rights to *The Hunt for Red October*, which is a submarine thriller novel by Tom Clancy.

The company is also moving

into the 16-bit market for the first time as many of its titles will now be released in versions for the ST and Amiga as well as the usual 8-bit machines.

Quick-silva's sister company, Bug-Byte, is preparing to launch a range of 16-bit budget games beginning with *Missing: One Droid*, an ST shoot 'em up priced at £9.99.

Of course it's only a game, Prime Minister. But in all probability we can hardly say so!



YES PRIME MINISTER

You're the Rt. Hon. James Hacker MP, Prime Minister. You have the world at your feet, the future ahead of you, and Sir Humphrey and Bernard behind you. Can you carry the Party, the Electorate, the Can and the Day?

Maybe. But for five days....?

Britain's premier computer game!

Program by Oxford Digital Enterprises.
Spectrum, Commodore, Amstrad and BBC
Cassette £14.95, Disk £19.95.
Available from W.H. Smiths, Boots and other leading stockists.



Mosaic Publishing Ltd,
Gorley Park, South Gorley, Hants SP6 2PS Tel: 0425 57077

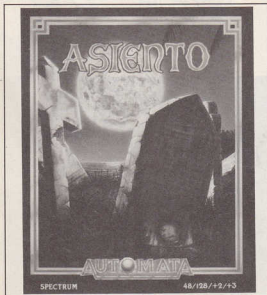
The Pi-Man returns



AUTOMATA, the innovative but commercially unsuccessful label founded by Mel "Pi-Man" Croucher, is back in business.

The Automata name, as well as the rights to the Pi-Man cartoon strip, and a number of games have been purchased by the Interceptor group (which includes Pandora, and the Players budget label).

The label will concentrate on adventures, all priced at £3.99, and the first three titles are *Nythyhel* (Amstrad CPC), *Sword of Kings* and *Asiento* (both for the Spectrum).



Melbourne House re-launched

MELBOURNE House experienced a bit of a relaunch at the show this week. After its move into the arcade field with the successful *Exploding Fist*, a series of lacklustre releases followed, which contributed to last year's takeover of the company by Mastertronic.

The 'new' Melbourne House is still concentrating on arcade games, but now seems to have some sort of coherent strategy in mind, as well as a shiny new logo.

A number of arcade conversions are planned (*Rockford*, *Road Wars*) across a wide range of machines, and there are some impressive new titles that have been developed on 16-bit machines, beginning with *Metropolis* on the PC.

The company's relaunch will continue through the autumn with three further titles planned for Christmas release.

Atari announce transputer plans

ATARI has announced that it is financing the development of a microcomputer which will not only make Acorn's Archimedes seem slow but will outperform large mini-computers with ease.

The new machine will be based on the Inmos T800 Transputer. This is the chip which can be slotted together with other transputers to share the work automatically.

The T800 is the top of the range transputer, having a 32/64 bit architecture and on chip floating point circuitry. The T800 also has incredibly fast graphics displays. This will offer an update rate of 13 frames per second on a 1 million pixel screen with a processing rate of 15 Mips.

The Atari machine is being developed by Perihelion, a British company which has been working on the project for some time. Tim King from Perihelion Software wrote Amigados for Commodore, and is now writing the Helios operating system for the Transputer.

There will be two machines. The first will be an add-on box for the Atari ST which will be followed by a stand-alone work-

station. Both systems will be based on a single transputer, although it will be possible to fit up to 13 T800's inside the case.

The ST add-on will provide stunning graphics along with networking and computation support. A 32-bit blitter chip, capable of drawing 100 megapixels per second, will ease the task of handling the very high resolution screen. The screen modes are:

1280 by 960 in four colours, 1024 by 768, 640 by 480 with two screens for rapid animation and 512 by 480 with over 16 million colours.

The Helios O/S may not be finished yet, but Perihelion already has several languages running including C, BCPL, FORTRAN, PASCAL, LISP and the transputer language Occam.

This does not signal the end of either the ST or PC ranges - Bob Glendow hinted that there will be new machines based on both the 68000 and 8086 families of processors.

No price details are yet available, but Atari made it clear last week that first shipments are scheduled for next June.

8-bits win by default

WELL, well. After all this year's huffing and puffing about 16-bit machines finally making a dent in the market, and the Spectrum and C64 being lousy value compared to the oh-so-wonderful ST, the name of the game at this year's show turned out to be 8-bit arcade conversions.

By far the largest number of licensed titles on show came from **US Gold**, which descended upon the show in a stand that looked like a cast off from E3K.

There, amidst the splendour of many flickering lights and huge video screens blasting out promo material for all the games, you could see Charlie Chaplin alongside *Captain America*, *Gauntlet II*, *Trantor*, *California Sports* and some military things from **SSI**.

They were also trumpeting the arrival of impossible *Mission II* which I wanted to see, but couldn't find for some reason. And as I was experiencing a bad case of sensory overload from trying to watch *Rygor* on two separate video screens at the same time, I decided to go and see what else was on show.

The **Telecomsoft** stand seemed to be full of high spirits, not surprising considering the goodly blow the company had just dealt **Hewson**. In fact the best looking game on the **Firebird** part of the stand turned out to be one of the games they'd 'appropriated' along with the Hewson programmers.

Rainbird had little in the way of 8-bit software, being one of the few companies that's really putting some effort into 16-bit stuff.

Star Trek, you won't be surprised to hear, was not conspicuously in evidence.

One of the more interesting arcade conversions announced (but not present, even in demo form) was **Konami's** version of its own arcade game, *Salamander*. The coin-op version has excellent *Alien*-inspired graphics and some absolutely huge sprites. I'm not sure how it's likely to look on a Spectrum or C64 (and Konami admit that

Cliff Joseph finds C64 and Spectrum users well catered for

they won't be able to get all of the game into those machines), and you'll have to wait until much nearer Christmas to find out.

Oh, hang about a bit, back to US Gold for a sec. If I hadn't been brain-damaged by the sheer awesomeness of their stand, I would have mentioned that US Gold and **SSI** have jointly tied up the official *Dungeons and Dragons* software rights. I say 'official' because there are whole hordes of computer games that have been inspired by the spirit of D&D, including just about every adventure game that ever had a troll or a dwarf in it.

SSI will be producing a series of role-playing adventure games, while US Gold will concentrate on arcade-style trolly-bashing. The deal has only just been signed, so no release dates were available for the games.

There were quite a few stands that didn't seem to have anything new on them at all; some of these were dealers flogging old software at knock-down prices, but quite a few were software houses who simply didn't have anything new to show. The likes of **Llamasoft**, **Durrel**, and various others were plugging their back catalogue with only video demos of a couple of titles to whet people's appetites.

Llamasoft was even plugging an old Vic 20 compilation, but made glorious restitution by announcing a new shoot 'em up provisionally entitled *Eat Lead and Die, Alien Filth* (I just hope it's better than *Carnets 2*, that's all). Jeff Minter is also planning a follow up to *Colourspace*, but that's 16-bit so I'm not allowed to talk about it.

My biggest disappointment came at the **Elite** stand, where I



was eagerly hoping to get a look at the *Thundercats* game that's being programmed by **Gargoyle Games**. However, **Elite** continued their tradition of being the least cooperative software house of all time.

The stand covered a fair bit of floorspace, which was surrounded by a great deal of blank wall. There were video demos of some of the games at one end of the stand, and a couple of refugees from *The Stepford Wives* handing out ads for the games at the other end. But no games, no coin-op machines to play with, and all my earnest little pleas for more info got me a grin from one of the *Wives* and a price list of old

games.

Once I'd absorbed the barrage of demos, press releases, and little salmon sandwiches which the crusts cut off, I was left with the impression that things this year were much the same as at last year's show. The top companies then are still the top companies now, and **Spectrum/C64** arcade games still dominate the release lists.

Consolidation rather than progress would be the kindest description I suppose. The creative side of games programming hasn't been extinguished by any means, but games are now much more likely to be written to satisfy the terms of an agent's contract than the programmer's imagination.

There's a clear drift of talent moving from the smaller companies to the bigger set-ups (dramatically demonstrated by **Telecomsoft's** raid on the Hewson team). But the commercial backing these companies can provide now give programmers the freedom to spend more time and money on development, which has obvious benefits.

In a way it's a bit disappointing, because it means that things haven't really progressed much since last year. On the other hand, if you're a 14-year-old Spectrum owner you should be very happy.

Palace battles on with Barbarian



The protuberant Ms. W.

UNPERTURBED by the controversy surrounding its *Barbarian* game, **Palace Software** has completed the ST version of the game which, with its improved graphics and sound effects, is even more realistic than before. And in an attempt to boost sales of its ST title, **Palace** has decided to price the game at £14.95, almost bringing it down to budget levels for 16-bit software. As well as *Barbarian*, **Palace** was also demonstrating the *Shoot 'Em Up Construction Kit*, a sophisticated games writing utility.

Two new titles, *Starship* and *Rimrunner*, were announced for Christmas release but are still in the early development stages.

ONLY 70 SHOPPING DAYS UNTIL CHRISTMAS

All prices VAT & delivery inclusive

For Commodore

Dynamic Duo

Excelsior+ & GEOS

WHAT A BUNDLE! The critically praised Excelsior+ disk drive is now being offered with the super sophisticated GEOS (Graphic Environment Operating System) absolutely **FREE** (normally £49.95).

Excelsior+ & GEOS OFFER...£159.95

Also available as above but with the Freeze Machine backup cartridge for £179.95

Slimline 64

replacement case

Make your old '64 look like a smart new 64C with this simple to fit quality product.

ONLY £19.95

'64 Circuit Board...Complete, brand new, use for spare, repair or upgrade a Vic-20. Limited quantity...ONLY £45.00



The Excelsior+ & GEOS pictured with a '64 installed in a Slimline case

For PCs

32 MEG HARDCARD

PRICE DESTRUCTION!

Western Digital Filecard

Only
£319.00
INC VAT & DELIVERY

A staggering offer on top brand equipment, due to our purchasing commitment we can offer this product at below trade price!! We even supply it ready tested and configured, all you have to do is slot it in and start using it (please specify 1512, 1640 or other).

- Simple fitting
- Low power consumption
- Superb quality
- Full year warranty
- Suits SD or DD PCs

STOP PRESS
"XTREE" file management software included **FREE**. This normally retails for £50.00

21 MEG HARDCARD

Western Digital 21MEG Filecard
Same features as 32MEG above **£269.00**

COPY II PC

Central Point Software's popular & powerful disk backup program. Also transfers many popular programs to hard disk, latest version **£34.95**

COPY II OPTION BOARD

Make backups of ANY software (other than protection by physical damage) using this expansion card. **£79.95**

PC TOOLS

Central Point Software's disk utility package, combines best features of Norton, Fastback & Disk Optimizer at an ultra-low price **£34.95**

MEMORY UPGRADE

Upgrade 1512 memory to 640K, full instructions **£19.95**

TAPE STREAMER

Cipher 1525-CT, 25 MEG capacity for Amstrad **£469.00**

NEC V30

Replaces 8086, improves operating speed **£24.95**

8087 - 2 MATHS CO-PROCESSOR

8MHz, improves calculation speeds **£159.00**

2 MEG "EMS"

Fully loaded Zucker 2MEG RAM board **£299.00**

MODEM CARD

Amstrad's PC modem, Inc Microlink membership **£158.00**

1512/1640 PRICE CHECK

Choose an Amstrad PC from our vast range. We offer outstanding value with our Evesham upgraded models. The single drive versions are professional internal installations leaving maximum room possible for future expansion, the double drive versions use a hardcard. All systems are supplied fully configured, ready for operation. Service contracts arranged. 1512 models can be supplied with 640K RAM upgrade installed for £20.00 extra.

(Prices in light type are ex VAT prices)

STOP PRESS FREE with 1512... Migrant Ability & 4 games
(former retail value over £200.00)

	SD	DD	AMS 20MEG	SD 21MEG	DD 21MEG	SD 32MEG	DD 32MEG
MONO 1512	381.74	477.39	N/A	599.26	893.91	541.74	737.29
COLOUR 1512	520.87	616.52	N/A	737.39	830.04	780.87	876.52
MONO 1640	484.78	581.74	999.00	711.30	796.26	754.78	841.74
COLOUR 1640	625.22	712.17	912.17	841.74	928.69	885.22	972.17
EGA 1640	755.85	842.81	1129.57	972.17	1059.13	1015.65	1102.81
	869.00	969.00	1299.00	1118.00	1218.00	1168.00	1268.00

Make the right decision with a

star

- All printer prices include:
- VAT
 - INSURED DELIVERY
 - PRINTER CABLE

printer from Evesham Micros

We use and recommend Star printers, they offer the best combination of features, print quality, reliability and value for money.

Star **NL-10** New low price (inc. cartridge, state type) **£219.00**

*** 2 x extra ribbons (value £13.90) **FREE** with NL-10 orders ***

Star **NL-15** Wide carriage version of **NL-10** **£319.00**

Star **NL-15** Faster version of **NL-15** **£419.00**

Star **NL-15** 240cps, 60 NL wide carriage **£499.00**

Star **NL-15** 240cps, 60 NL wide carriage **£479.00**

Star **NL-15** 240cps, 60 NL wide carriage **£399.00**

Star **NL-15** Ultimate 24 pin, 100cps in NLQ! **£719.00**

Star **SP15-D** Sheet feeder, all 10" models **£59.00**

Star **SP15-D** Sheet feeder for NX, ND & NR15 **£159.00**

Star **SP15-B** Sheet feeder for NB15 & 24-15 **£199.00**

PANASONIC KXP-1081 Best sub £200.00 model **£179.00**

Micro P. MP165 Fast & popular **£219.00**

Micro P. MP200 Very fast printer for the money **£249.00**

Micro P. MP26 Excellent 26cps d'wheel great value **£249.00**

Micro P. MP40 Yes a 40cps d'wheel for this price **£349.00**

Amstrad MP160 New version now 160cps **£189.00**

Prices include VAT/delivery. Next day delivery £5.00 extra

How to order

Send cheque P.O. or ACCESS/VISA details
By phone with ACCESS/VISA
Govt., Educational or PLC orders welcome
Same day despatch whenever possible
Callers welcome, open 9 days 9.30-5.30
All goods subject to availability E.K.O.E.
Telex: 333294 Fax: 0386 765354

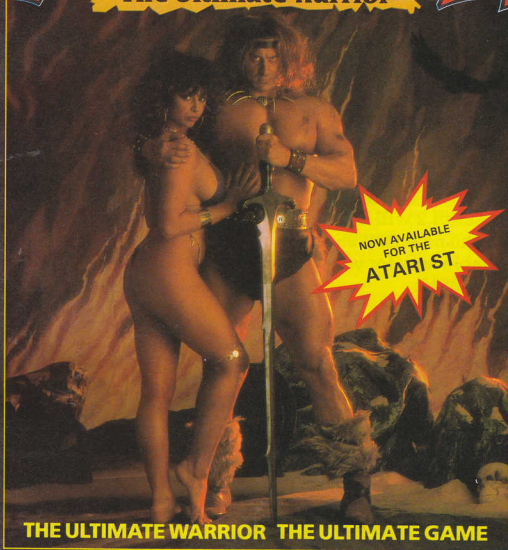
Evesham Micros
63 BRIDGE STREET
EVEESHAM
WORCS WR11 4SF
Tel: 0386 765500

Also at: 1756 Parshore Rd., Cotteridge, Birmingham, B39 3BH Tel: 021 458 4564

**Evesham
Micros**

BARBARIAN

The Ultimate Warrior



NOW AVAILABLE
FOR THE
ATARI ST

THE ULTIMATE WARRIOR THE ULTIMATE GAME



SPECTRUM VERSION

Available from all good computer game stockists,
or by mail order from: Palace Software,
275 Pentonville Road, London N1 9NL.

AVAILABLE FOR:
COMMODORE 64
48k SPECTRUM
AMSTRAD CPC



PALACE SOFTWARE



AMSTRAD VERSION

Send cheque or postal order for £9.99 (Cassette),
or £12.99 (Commodore or Amstrad Disk) plus 80p P&P.
Access and Barclaycard holders telephone 01-278 0751.

When Amstrad wanted to make a better PCW, they bought LocoScript 2

When you want to make your PCW better, you too can buy LocoScript 2[†]

Locomotive Software's LocoScript 2 will be supplied with the new PCW9512, but is available now for your PCW8256 or PCW8512.

LocoScript 2 costs just £19.95, including VAT and UK postage ('but of course, it won't turn your 8256/8512 into a 9512).

For full details of LocoScript 2 contact Locomotive Systems or your local dealer.

LocoScript 2 gives you

Quicker use

- Fast movement around documents
- Jump direct to a page
- Save and continue from last position

Better Results

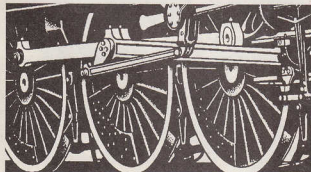
- Choice of printers
- Improved characters on the built-in printer
- New characters (including modern Greek /Cyrillic)
- Special scientific characters
- Use accents with any character

Easier Operation

- Multiple printed copies
- Disc copying direct from LocoScript
- New user guide with glossary and quick reference
- Improved FIND and EXCHANGE

Compatibility

- Familiar feel of LocoScript menus
- Use existing LocoScript documents
- Free upgrade of LocoMail and LocoSpell at the time of purchase



LocoScript 2
from
**LOCOMOTIVE
SYSTEMS**

Dept LPW, Allen Court, Dorking,
Surrey, RH4 1YL
(0306) 887902

Commodore Amiga 0, Atari ST 1

Even so called trade
days were very busy



This year both Atari and Commodore fielded their own villages, separate from the main hubbub of the central hall of the show. While great things have been expected, what with the paucity of pre-show product in both camps only the Atari village looked remotely alive.

The prolific Microdeal were selling the *Airball Construction Kit* for the ST. For only £14.95 you too can design up to 300 interconnecting rooms, filled with superb sprites like the leering warriors, pouting maidens, haunted faces, archways, coffins, and battlements. For all *Airball* addicts an irresistible package. Also new from Microdeal was *GFA Companion*, a dedicated RCS package designed to create Dialogue and Error boxes, and other such Gem goodies, for integration with *GFA Basic* programs.

Games that we had been waiting for, namely *Leatherneck* (*Commando* variant) and *Tanglewood* (difficult to categorise four-way scrolling arcade game) were not ready. In the case of *Leatherneck* the game is still waiting to be written, but *Tanglewood* is only a couple of weeks away from release.

Also shown were *Fright Night*, based on the Columbia Pictures film, and a football game which will be available for both the ST and Amiga sometime in November. Other mooted titles were *Omega Run* (ST, £24.95) and the Amiga version of *Airball* (£24.95).

Round the corner on the Eidersoft stand, the promised bunch of new releases in the Pro series failed to materialise. *Pro-MIDI* was on show, allowing you to connect the *Pro Sound* sampler to a MIDI keyboard, but finished versions were not anticipated until next week.

Pro Light and *Pro Drum* were similarly inconvenienced, but more surprising was that the promised bundle of *Pro Sound*, MIDI software and a dumb keyboard for £100 is far from certain to appear at all.

The latest game on the Paradox label was less than impressive, but Eidersoft's other new title, *Vegas Gambler*, by California Dreams, was at least professionally produced.

For hardware, the only new item Eidersoft had was only a twin, double sided disc drive, retailing for the reasonable sum of £249.99.

Pygnosis, the well-known

purveyors of graphically excellent but dubiously animated games, released its latest effort. *Terrorpods* for both the ST and the Amiga. The game, costing £24.95 and looking virtually the same on both machines, is rather odd to say the least. A mining planet full of different types of installation has been occupied by the *Terrorpods* who are using the facilities to build the components for some sort of supreme war machine. Your task is to trade with the installations and buy up the components, while fending off attacks from the *Terrorpod* mothership and its forces. While the action, colourful and noisy for your zap gun and clever for the missiles, is fast and furious you've got to keep one step ahead of the enemy in order to keep your own supply levels up. The graphics and sound effects are excellent of course, and the animation is well up to scratch so look out for this one.

ST stalwarts turned out an impressive product list, the highlights of which were for the ST, *Monitor Master* (£49.95) which switches painlessly between mono and colour inputs. *Hi-Tec Cartridge Expander* (£49.95) to enable you to plug up to three cartridges in at the same time, although finding three you'd want continuously plugged in might be difficult, and *Skyplot* (£69.95) for all those astronomers out there with 1 meg systems.

For the Amiga, **Robtek** had a 2MB RAM expansion box at a cool £449, slimline 3.5" and 5.25" disc drives for £169.95 and £199.95, the *Hi-Tec Sound Digitizer* (£89.95) which produces IFF-compatible sample files, importantly for those interested in music a MIDI interface (£39.95) which plugs into the serial port, and finally an impressive graphic database called *Microfile Filer* (£79.95). Just for the show Robtek was also knocking 20-40% off the price of most of their products.

Frontier Software was rather quiet, the only thing of interest besides their range of hard discs was the *MicroStuffer* which will work with any computer that connects to a printer via a Centronics interface. It is of course, a printer buffer, a 64k one at that and has a repeat button, which will make mail shots easier anyway.

Nothing particularly new was forthcoming from **Computer Concepts** this time, just the regulars like *Fast ASM*, *ST Doctor* (both £19.95), *Backpack* and *Fast Basic*. Speaking of which a new user group specifically for *Fast Basic* programmers has been set up, called *Fast* unsurprisingly. Officially supported by CC claims the introductory leaflet, urging you to spend £6.00 on subscribing to the user group magazine. Their address is 42 York Road, Rayleigh, Essex SS6 8SB, and despite any passing snide remarks about

any magazine except *ST World*, or anyone not a *Fast Basic* user, for devotees of that language it should be worth getting involved.

French outfit **UBISoft** was at the show, primarily looking for UK distributors, and having seen previews of *Iron Lord* (fantasy trash) and *Zombie* (arcade adventure) both of which were graphically impressive (and on the ST), let's hope they tie something up soon. The games are expected to be released in France for Christmas.

Sahara Software (01-735 3806) were once again displaying their impressive alternative ST operating system, *Mirage*. Languages for the system now include, Fortran, Pascal, a Basic Compiler and Lattice C.

On the main Atari stand nothing much transpired. The Mega STs were about and so was the overpriced Atari Laser Printer. An announcement that was interesting concerned the long awaited CD ROM, a compact disc that can store up to 600MB of data, retrieved at a rate of 1.5Mbits/second. The price will be approximately £400 and is due to be shipped before the end of 1987; but how many times have we heard that from Atari? An interesting footnote is that the Atari CD Rom will also allow you to play audio compact discs on it.

One unwelcome feature was to be found in the official Atari Welcome to Atari World guide,

which was produced by the staff of *S7 World*, the magazine Atari recently bought a large slice in. In the section highlighting important products for the ST a hard plug was given for Skulldiggery from Nexus. This Boulderdash game was written by none other than *S7 World's* editor, Hugh Gollner. Tacky lads, tacky.

Software Precision (01-330 7166) was actively promoting their *Superbase Personal* and *Superbase Professional* packages, as well as the lesser-known items in the product line such as *Paintpro* (£49.95), a graphics design package, *Textpro* (£39.95) a word processor, *Forth/MT* (£49.95), a multitasking implementation, as well as their range of books.

Digital Research, not Atari's favourites I imagine, turned out GEM Draw Plus, GEM Graph, GEM Wordchart and GEM Write (all £99.95) and promised GEM Paint and ROM Pack. For further information contact Silica Shop (01-309 1111).

If the Atari village wasn't exactly brimming over with excitement, it was still worth paying a



call to. Unfortunately, for Amiga owners, the **Commodore** village was not only smaller, it was

more like a wake.

The Amiga Centre in Scotland did the most to fly the flag, with *Sculpt-3D*, a program which boasted that any shape could be manipulated to form any kind of surface. Amongst its features are the use of all the Amiga's graphic modes and 4096 colours, and ray tracing for effects like those found in the Juggler demo. Price? A very reasonable £69. Also distributed by the Amiga Centre is *AIRI* (£55) which is basically icon-driven programming. How good this is really does remain to be seen. Other product included

details call (031) 557 4242.

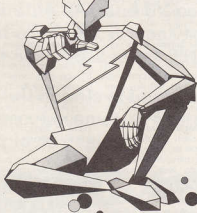
Haba Marketing and Eider-soft shared a stand, the most interesting thing thereon was *Digi-Paint*, the 4096-colour art package from the producers of *Digi-View*. Also up and running, the impressive and wonderful *Faery Tale*, an essential buy for fantasy gamers.

Commodore contributed to the dreary atmosphere with a cabinet containing their computers through the ages. And I was hoping I'd never see a Vic-20 again!

Out in the main hall, the major software houses produced the

WE WANT YOU!

PLAYERS



THE PLAYERS TEAM ARE OUT LOOKING FOR YOU!

CAN YOU WRITE COMMERCIAL QUALITY GAMES IN MACHINE CODE?

Write in Strictest Confidence to:
RICHARD PAUL JONES
PLAYERS SOFTWARE, CALLEVA PARK
ALDERMASTON
BERKS RG7 4QW

or phone: (07356) 77421 (5 lines)



Jeff Minter was there, as always. Old hippies never die!

Forms in Flight (£60), 3D graphics package, *Express Paint* (£58), desktop graphics, *Animator Apprentice* (£195) for 3D animation, and *Ray Tracer* with source code in both and Amiga Basic to enable you too to produce HAM mode spectaculars like the *Juggler*. For more

usual video and sound productions to take your mind off the fact that few of them had finished products to show. Yep, it was demo time folks.

Activision was showing *Enduro Racer* on the ST on its stand, and quite nice it looked



too. Also on its way from Activision, and available now, is the Amiga version of *GFL Championship-Football* (£24.95) for all you American Football fans.

From **Electronic Arts**, the brilliant *Bards Tale I* is expected real soon for the ST, with *Marble Madness* to follow. Considering that Trip Hawkins (the boss) once said that EA wasn't going to pay the ST much attention it's amusing to see the company doing an about turn in the UK because of the superiority of the ST here.

Mirrorsoft and **PSS** shared a stand, and it's significant that when confronted by the press, John Cook, Mirrorsoft's Product Manager, immediately bolted.

After a long wait PSS has finally, and it would appear furiously, launched the ST version of *Annals of Rome*. Written in C this version should overcome the slowness (not to mention the bugs) that hindered the worthy Spectrum original.

PSS has in fact got quite a catalogue of games that they've designed the artwork for but haven't written. The first one ought to be *Power Struggle*, a game of superpower politics. Watch out for that around the turn of the year. Looking further into the future planned projects include *Spycatcher* (ho, ho), *Battlefield Germany* (ST), *Leathernecks* (both), *Fortress America* (ST) and *Final Frontier* (ST).

No sign on *Defender of the Crown* on the ST from **Mirrorsoft**, although one of the other Cinemaware games, *King of Chicago* was previewed on the Amiga. On the Amiga coming soon list are also *Bermuda Project* (rather like *Faery Tales*, *GA10* and *Strike Force Harrier*.

For ST owners the coming soon list includes, a space shuttle simulation called *Orbiter*, which features every possible hazard *Bermuda Project* and *Spittire 40*.

British Telecom made a strong impression with *Rainbird*, *Firebird*, *Magnetic Scrolls* and *Level 9*. The third adventure from Anita Sinclair and *Magnetic Scrolls* is going to be *Jinxter* (all formats), which sounds quite awful (luck deserts happy land witches disperse seven parts of protective charm), but will probably turn out to be very good all the same.

Level 9's next effort will be *Grime Ranger*, in the same vein as *Knight Orc* and with digitised pictures again (of paintings this time?). Release date is October xth for Amiga and ST versions, priced at the very reasonable sum of £14.95.

Another TBA production from **Rainbird** is *Universal Military Simulator*, which sounds quite tasty. You can re-enact battles from Hastings to Gettysburg on a 3D grid system that can be viewed from any angle. Also

there is a map creator to design your own battlefields and even armies. If the programmers (*Intergalactic Development*) can pull it off it sounds a dream come true for computer wargamers.

And yet more from **Rainbird** includes *Black Lamp*, written by Steve Cain and Graham Everett, responsible for *Star Trek*. This is a medieval arcade adventure and by all accounts, well worth taking a look at.

Firebird was slightly subdued. I didn't see *Star Trek* running on anything other than a video machine. What was on show was *Genesis*, Steve 'Goldrunner' Bak's latest production. Super smooth and very fast horizontal scrolling were used to great effect but only half of the screen was being used which was rather disappointing.

Other dribs and drabs include *Elite* promising *Thundercats* (based on the toys) for the ST. Addictive Games releasing (cor!) *Football Manager x* (ST) for £14.95, presumably just in front of FM 2 at £19.95.

Cameron, distributed by *Lightning*, was showing a mouse shaped scanner (ST/Amiga) for copying pictures onto the screen. Very impressive it was too even if the images were only in mono.

Novagen has two new games coming up for the ST. *Backlash* (£19.95) and *Demo-clés* which features solid 3D

DIARY DATES

OCTOBER

15-17 October

Desktop Publishing Show

Business Design Centre, London

Details: Demonstrations of latest hardware and peripherals, plus seminars and user clinics

Organiser: Database Exhibitions, 061-456 8383

NOVEMBER

14 November

National Einstein Exhibition

National Motorcycle Museum, Birmingham

Details: Einstein software etc.

Price: 50p

Organiser: UKEUG (0473) 49507

Prices, dates and venues of shows can vary, and you are therefore strongly advised to check with the show organiser before attending. We cannot accept responsibility for any alterations to show arrangements.

planets which you can fly toward, or around, in *Elite* style.

US Gold released *Indiana Jones* and the *Temple of Doom* for the ST, and it looks dreadful. We're still waiting for *Solomons Key*, and the **SST** products, *Wizards Crown*, *Shards of Spring*, *Gettysburg* and *Rebel Charge*. However *Phantasia III* for the ST is out and so is *Kampfgruppe* for the Amiga.

Aackosoft is a Dutch outfit with some dubious material in their catalogue (namely *Leather Skirts*). With a November release date though is *Flight Deck* (ST/Amiga) and further on, *Police Academy 2* (ST), *Hype* (Amiga) and *Indy 500* (ST).

And finally, **Melbourne House**, now an adjunct of **Mastertonic**, announced *Metro-polis*, *Roadwars*, *Rockford* and *Kelly X* for both ST and Amiga.

For Atari ST owners, PCW 1987 was a reasonable affair, but something of a let down for Amiga owners who got little more than press release promises.

Duncan Evans



VISA

BYTEBACK

THE ATARI ST SPECIALIST

BEST PRICES FASTEST DELIVERY!

GAMES	RRP	ONLY	ADVENTURES	RRP	ONLY
TNT	19.95	14.75	Space Quest	24.99	18.75
DeathStrike	14.95	11.00	Kings Quest III	24.99	18.75
Eagles Nest	19.95	14.75	Golden Path	19.95	15.50
Runes of Magic	24.95	19.75	Gold of Thieves	24.95	19.50
Autoduel	24.95	19.50	Bureaucracy	29.95	23.50
Jupiter Probe	14.95	11.00	Hollywood H-Jinx	29.95	23.50
Ducast	9.99	7.50	Cuestprobe	19.95	15.50
Armad	10.95	14.75	Kings Quest II	29.95	23.50
Boydier Dash	24.99	19.50	Jewels of Darkness	19.95	15.50
Crafton and Xank	24.99	19.50	Silicon Dreams	19.95	15.50
Gauntlet	24.99	19.50	Alternate Reality	24.95	19.50
Star Trek	24.99	19.50	Tech	24.95	19.50
Barbarian	24.95	19.50	Hitch Hikers Guide	29.95	23.50
Airball	24.95	19.50	Tass Times	24.95	19.50
MGT	24.95	19.50	Damaged Time	24.95	19.50
Arkand	14.95	11.50	Minishadow	24.95	19.50
Goldrunner	24.95	19.50	Leather Goddesses	29.95	23.50
Metro Cross	24.95	19.50	Mind F. Vengeance	24.95	27.50
Meuse Trap	14.95	11.50	Zork (I, II or III)	29.95	23.50
Skyfox	24.95	19.50	Deadline	29.95	23.50
Prohibition	19.95	15.50	Endurance	29.95	23.50
Turbo GT	15.95	12.50	Serena	29.95	23.50
SDI	45.95	36.50	Spellbreaker	29.95	23.50
Balance of Power	29.95	23.50	Black Caddison	29.95	23.50
Arma - Balazac	24.95	19.50	White the Poob	24.95	19.50
Eden Blues	24.95	19.50			
Traillabre	24.95	19.50			
Macadam Sumpier	24.95	19.50			
Liberator	12.95	10.00			
Timeblast	9.95	7.50			
Phnos	14.95	11.50			
Xenious	24.95	19.50			
Luchelcar6	24.95	19.50			
10th Frame	24.95	19.50			
Shackler	24.95	19.50			
Hanger 1 or 2	24.95	19.50			
L Computer People	24.95	19.50			
Stop Polar	19.95	15.50			
The Boxing	14.95	11.50			
Joust	29.95	23.50			
Star Raiders	29.95	23.50			
Word For Word	39.95	31.50			
Super Huey	19.95	15.50			
Arctic Fox	39.95	31.50			
O Rail	19.95	15.50			
Champ Wrestling	24.95	19.50			
Rogue	24.95	19.50			
Winter Games	24.95	19.50			
Super Cycle	24.95	19.50			
GFI, Disney Football	24.95	19.50			
Basketball (2 on 2)	24.95	19.50			
Karate Master	12.95	10.00			
Typhoon	19.95	15.50			
Ninja Mission	9.95	7.50			
Techrate Chess	19.95	15.50			
Shuttle II	24.95	19.50			
Karate Kid II	24.95	19.50			
Rebbit Factory	24.95	19.50			
Cards	19.95	15.50			
Electronic Pool	19.95	15.50			
Major Motion	19.95	15.50			
Time Blast	29.95	23.50			
Landis of Havoc	19.95	15.50			
Silent Service	24.95	19.50			
Snake Force Warrior	24.95	19.50			
Mercenary	24.95	19.50			
Universe 2 ST	89.95	85.50			
ST Karate	19.95	15.50			
Protector/Space Sn	24.95	19.50			
War Zone/Fire Blast	24.95	19.50			
3D Chess	24.95	19.50			
Deep Space	34.95	27.50			
Wonderer 3D	24.95	19.50			
Starlight	24.95	19.50			
Right Sin II	49.95	39.00			
Phantasia II	24.95	19.50			
Temple of Apsala	24.95	19.50			
Ultimate 2 or 3	24.95	19.50			
Road War 2000	24.95	19.50			

Lists of Public Domain Software from only

£3.50 per disk

ALL PRICES INCLUDE VAT AND FIRST CLASS POST
TELEPHONE (0636) 79097 FOR PERSONAL ASSISTANCE
Send Cheque/PD to:

BYTEBACK

Dept. STUP, 6 MUMBY CLOSE,
NEWARK, NOTTS NG24 1JE

QUALITAS

QUALITAS is now established as the print-enhancement system for the Amstrad CPC and Sinclair Spectrum computers. Only Qualitas offers all this and more:

- Superb near-letter quality (NLQ), even on many ordinary printers!
- Proportional characters and micro-justification for that professional look.
- Several print modes: normal-height, double-height, normal-width, half-width, double-width, subscript, superscript, underline and emphasised.
- Five business fonts supplied - many others available, including decorative, foreign and italic styles for letters-heads, newsletters and posters.
- Easy-to-use font designer including so you can modify our fonts or have fun designing your own!
- So convenient - use direct from within your word processor or on its own.

Qualitas is invaluable if you have an NLQ printer but with older printers it's an absolute "must" as it could save you the cost of a new NLQ printer! Qualitas Plus tops for the Spectrum 48K £10.95; Qualitas 464 disc for the CPC464/664 £12.95 (UK post free, Europe add £1, elsewhere add £2 airmail). Please state your computer, printer and word processor. Fast mail order with 14-day "full refund if not entirely satisfied" guarantee (statutory rights unaffected). Trade enquiries welcome.

"If you want to give your printer a new lease of life Qualitas can be recommended." - Computing with the Amstrad CPC 8/87

"A tick in the arm for your printer. Easy to use and great value. The link into Taward is neat. (Five stars awarded)." - Sinclair User 8/86

SEVEN STARS

Seven Stars Publishing,
34 Squirrel Rise, Marlow,
Bucks SL7 3PN. Tel: 06284 3445

PS. Earlier Spectrum versions can be upgraded - contact us for details!

A MUCH BETTER DEAL - WEEK AFTER WEEK

NOT ONLY DO THE LEAVES
DROP IN SEPTEMBER
SO DO OUR PRICES

AMSTRAD COMPUTERS
P.C.W./PC1512/PC1640

ALL AT TRADE PRICES

HOW TO SAVE UP TO £280.00

ON AMSTRAD P.C.

WELL OF COURSE PHONE

WAVE NOW!!!

All current chart games software retail less 25% + £1 P&P
ANC 3 day £9.00. Next day £12.00. Admin. Offices: Callers by appointment only.
UK Post & Ins. (A) £5.00 (B) £4.00 (C) £3.00 (D) £2.00 (E) £1.00 (F) 50p.
Despatched by return of post. Prices in this advert are valid for 14 days.

W.A.V.E. (Dept. POP 1809)
Walney Audio Video & Electrical
53 Shearwater Crescent, Barrow-in-Furness,
Cumbria LA14 3JP. Telephone: 0229 44753/29109

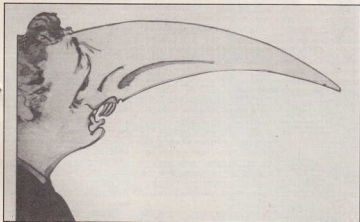
"OF COURSE PRIME MINISTER

You do grasp fully the
enormous complexity of the
issues behind the present
COMPETITION?"

"Don't be ridiculous, Bernard, it could
hardly be more simple . . ."

Popular Computing Weekly
is joining forces with
Mosaic Publishing in a
competition to celebrate the re-

lease of *Yes Prime Minister*, the
licence of the long-running hit
television series.



The questions are as follows:

- 1) What was Jim Hacker's job before he became Prime Minister?
- 2) Name the actors who play Hacker, Sir Humphrey and Bernard.
- 3) What is Sir Humphrey's full official title?

No less than fifty *Yes Prime Minister* games are on offer as prizes, and all you have to do is answer the three simple questions below, AND provide a new slogan for the game to be used as a tie-breaker.

All entries must arrive by last post on October 23rd 1987. The competition will be judged by Francis Jago, Executive Editor, and John Brissenden, Deputy Editor of *Popular Computing Weekly*. The judges' decision will be final, and all winners' names will be published in a future issue of *Popular Computing Weekly*.

Please send your entries to: Competition, *Popular Computing Weekly*, Focus Magazines, 3rd Floor, Greencoat House, Francis Street, London SW1P 1DG.

Please mark your envelopes or postcards 'COMPETITION'.

**Don't forget to include a slogan for the game. You could win one of fifty copies of
Yes, Prime Minister.**

More Memotech misconceptions

With reference to the recent correspondence concerning the Memotech "quirk", as a major Memotech retailer we feel that the time has come when the matter should be clarified. Firstly, it has been established that the "quirk" is due to misaligned televisions.

This problem affects less than 0.1 per cent of users. In both the cases of complaint, a refund was offered if the customer so decided. In both cases this offer was turned down because they felt that the computer, even with their misaligned televisions, was excellent value. It is very rewarding to note that many satisfied users are taking the trouble to write to you, and explaining the problem that these two customers experienced.

We fully support the Memotech computer and will continue to do so just as long as we are able. The user base is growing daily in this country, and this can only be good news for the existing users.

Ron Gladwyn
UK Home Computers
Swindon

Risky business

It was with cynical interest that I read your interview with Mrs. Thatcher's erstwhile favourite "hi-tech" entrepreneur. I have the misfortune to own an excellent operating system hooked to an ill-conceived machine of his designing (a QL). His statements regarding RISC processors were quite in keeping with his "bodge it and hope" philosophy. He also chose to compare a CISC command with a RISC command. He appears to have missed the essential point. If for his comparison he had chosen an "ADD" instruction, common to both chips, a real comparison would have been possible. From my admittedly limited reading on the matter, the advantages of the RISC philosophy are based on the fact that commands such as "MUL" are not often used. Often much pre and post evaluation of the result is also required. Yes, these are available as commands in a CISC, but often they are not quite what you want, and with so many instructions available, even if the instruction set is well

known, hours are spent checking in manuals for mode compatibility and checking no unforeseen flags being set. Incidentally, I read recently that the 386 co-processor isn't reliable when performing 32-bit multiplications, and gives variable answers. I for one don't want to rely on dodgy hardware to add to my own ability to obtain wrong answers.

If one has a fast set of basic instructions that can be built into more complex customised structures the advantages become obvious. Once written they can be held in a library of macros to be recalled and modified when needed. To have complex operations combined into one command is going to generate compromises both in design and use.

I have to agree with his disappointment regarding quality of current 16-bit home machines, however, not his reasoning. The current crop of offerings in this category have only been around for a year or so and thus in the position that the 8-bit market was in the late 70s. Could one really visualise a Commodore 128 when the state of the art was the Rockwell AIM? The problem at the moment is that designers are still shaking off the 8-bit ethos and restrictions. The potential of the 16-bit processors will probably never be fully exploited, the 32-bit machines will come to the market in less than the nine year lifespan of the previous generation. This raises economic questions. Developing both soft and hard technology is capital inten-

sive. Recouping invested capital will be over a much shorter production run so unit cost will be higher. Perhaps to the point where the product becomes uneconomic.

Portability would be an obvious solution, but as this is not a facet of Clive's philosophy I don't suppose this would occur to him.

However, I take all pronouncements from him with a pinch of salt; after all, isn't this the man who put the cause of electrical vehicles back by a decade?

Andy Smith
London

Software body

The other day, when I was browsing through a back issue (August 7-13) I started musing on the relative prices of computer games for the "popular machines" (ie, the CPC464, C64 and Spectrum), compared to the music industry, which in many ways is similar.

Now it seems that the prices are considerably out of proportion. I know several people who are in bands and write their own music and they can spend more time working on a song than seems to be spent on a game and yet they get considerably less per copy sold than a software writer. But this is not my real gripe with the software industry, as I have been "into" computers since 1981 when I purchased a ZX81, I then moved on to a VIC20, a Memotech and now an Amstrad CPC6128. I would like to move to an Atari, Amiga or an Archimedes if I can raise the money.

Since then, I have seen the prices of software rise and fall continuously. Then I read Zigurat by Mike Lewis on the prices of software and he seemed to echo my thoughts, so I thought I would write in and air my view.

My thinking goes along the lines of: why not set up an independent body to look at the software for home computers which checks all new releases from the major companies and test them? They would then put it into a price category, such as £1.99 for the worst and £9.95 for the best. There would obviously be exceptions like the Infocom adventures *et al*, but you could then see what you wanted and have an idea of what it was like.

My second point is that in the good old days, if you wanted a

piece of software, you could try it out in the shop before you bought it. Now, if it is not to your liking, tough, you've paid for it. The only way to get it changed is to pray it goes wrong and you can demand your money back.

The third issue I would like to raise is piracy. I have recently finished a college course in computer studies (in a different area) and on this course we were given packages to use, we were told to copy these for class use, which I feel is fine, as the college cannot afford thirty copies of a package. But many of the students on the course were obtaining programs from the local computer shops, bringing them to college and copying them for other students.

I own a Multiface Two for my Amstrad and use this for tapes, as you can put six games on one disc, whereas you only get one on bought discs. I do, however, have all the original tapes in a draw of my desk. Why can't software houses do compilation discs of programs from their catalogue? Say, let the buyer choose up to six games they want and put them on one disc. Why bother with disc protection, as there are many ways round it?

D Wright
Fareham, Hants

It's tricky

I have recently upgraded to an Amiga 500. Certain items of software are duplicated from the Commodore 64 to the A500 and therefore I wrote to some of the relevant software houses, requesting an exchange on the basis of the difference in price plus the original C64 software, plus a small handling charge.

I would like to publicly thank Rainbird for their very fast assistance in doing the above.

To date, US Gold and Electronic Arts have not even had the courtesy to reply to, let alone consider, my request. Software houses are continually condemning piracy, but as long as some show the total apathy and ignorance that US Gold has done, then I find it very hard to have any sympathy.

I did not necessarily expect all to agree, but no industry lasts if it ignores its customers. Thank goodness for Rainbird.

Trevor Cobbe
Leeds





with Kenn Garroch

Share and share alike

Ian Fidler of Hemel Hempstead, Herts, writes:

Q I own a Commodore 16 and I'm just about to upgrade to a Plus 4 with disk drive and monitor. I would be throwing away my Commodore 16 so I was wondering whether I could use one disk drive for both computers?

A One of the problems with Commodore machines is that they tend to lock you into buying peripherals from Commodore. With this in mind, the disk drives are, as far as I know, all the same, and will work with any of the Commodore machines (Amiga excepted?). So, you should be able to use the Plus 4 drive with the 16.

Eeeny meeny miny mo

John Gray, of Eastbourne, Sussex, writes:

Q I am disabled and cannot get around to clubs or see demos in faraway towns. I am on the point of choosing a computer and colour monitor for entertainment, including some programming. I have looked at two systems available at a local branch of Comet.

The Atari STFM at £299 and the BBC Master Compact with its detached processor and 7.5" disk drive with Acorn colour monitor for about £588 complete.

With the Atari I would need

a good quality medium res monitor such as one of the Philips type with stereo sound. Since these are priced around £290, it doesn't leave much change out of £600 for the ST system. The BBC machine is a classic and looks good.

It is rather unfortunate to have to buy a pig in a poke and I can't even have a peek at how the Master Compact performs. Which set up would you plump for and why?

Incidentally, I'm OK for wordprocessing with a CPC6128 and Protex.

A For entertainment, I would certainly go for the Atari STFM system. Apart from being a much better computer than the 'Classic' BBC system which is getting a bit long in the tooth, it has far more software available. By entertainment, I presume you mean games, and the Atari beats the pants off the BBC in these stakes, the graphics are better, and the machine is faster.

For programming, the Atari is easily as well supported as the BBC, with Pascal, C, Lisp, Fort, Logo, Basic, BCPL, etc, being available at quite reasonable prices.

The disadvantages of the ST are that its keyboard is awful, the GEM operating system has a few bugs (nothing nasty but they are still there), and the disk drives are probably not as fast as the Master's. They are, however, a lot more efficient.

The Master is much more of a business orientated machine and, as you say, looks good. The problem is that there is not very much entertainment software available, and due to Acorn's 'stunning' marketing techniques, there is not likely to be.

Of the two machines, I'd certainly go for the ST - however, it is up to you in the end and you should be able to get a demo in the shop.

Double joy

Andy Singleton, of Huddersfield, writes:

Q I have been using an MSX machine for two years and have become increasingly annoyed

that several MSX games require two independent joystick fire buttons eg. Konami's *Nemesis* and *Penguin Adventure*.

The problem is that no such function can be found on any joystick available. I have two MSX joysticks, and both have two fire buttons, but each one has the identical function.

Is it possible to re-wire a joystick or its plug to create two independent buttons?

A Looking at the joystick port specification, there are two trigger inputs as you suggest. The problem is that most joysticks are made for use by left or right-handed people hence the need for two buttons wired to the same input.

To change the operation so that each of the buttons is independent, you will need to re-wire the joystick and its plug. Normally, the plug is moulded onto the cable so you will have to buy a new one, and some 8-core cable. Wire up the direction controls as before, to one of the buttons. The other button goes to pin 7 of the joystick port - see the diagrams.

The joystick movements and buttons are sensed through pin 8 is a connection between any of pins 1-4 (joystick) or 6-7 (buttons) tells the computer the switch is closed. Inside the joystick you will see a wire that is common to all of the switches, this goes to pin 8 of the plug and should still go to both of the buttons. To get the extra button, connect a new wire to pin 7 from the other side of the button switch.

The diagram in Fig. 2 should help with the new layout - I've not actually tried this but it seems straight forward enough, having had a good look inside the joystick.

You can get a suitable connector and cable from Maplin Electronic Supplies. Tel: 0702 554161 and the part numbers are RK61R (D Range 9 way socket @ £86p) and XR27F (multi-core 9 way @ £80ppm). Note that the cable is screened, it doesn't need to be, it's just that this is the simplest way to get multi-core cable.

1 2 3 4 5



6 7 8 9

- 1 Forward
- 2 Back
- 3 Left
- 4 Right
- 5 +5V
- 6 Trigger 1
- 7 Trigger 2
- 8 Output
- 9 Ground

Fig. 1 - the connections (MSX socket).

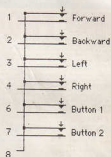


Fig. 2 - the switches.

A gouda buy

Andrew Price, of Melbourne, Derbyshire, writes:

Q I am considering the purchase of a Sony MSX 2 computer and as they are not available in this country, I shall purchase one from Dutch sources. I am aware of the PAL/SECAM/NTSC syndrome and have already resolved that problem, but what concerns me is the mains voltage. I believe that the Dutch national grid runs at 220V, and if this is correct:

- a) is it necessary to fit a step down (220-240V) transformer?
- b) where could I purchase such a transformer?

A If you can, the best thing to do is check the machine to see if it has an

NOW! £5 OFF ALL TRADE PRICES

YOUR MICRO DESERVES THE BEST...

When your home or business micro costs several hundreds of pounds, it deserves the finest repair facilities in Europe (well, probably!). And the finest prices – £5 off trade rates for a limited period only. ★ How? At Verran we use our own range of advanced automatic test equipment (now sold worldwide), backed by stringent 2-8 hours soak-rack testing. That means speed, ultra-low prices and, most important, guaranteed reliability. For the first three months we'll repair any fault free. For the next three, at half these quoted prices. ★ It's the finest service available.

★ Currently we handle over 3500 products on average every day. Providing services for such leading companies as Amstrad plc, Commodore Business Machines, Sinclair Research, Rank Xerox, Dixons, Currys, Boots, W H Smiths, John Menzies and many more. ★ Join them and take up our special offer now.

Recommended and Approved by

AMSTRAD ACORN ATARI SINCLAIR COMMODORE

★ SPECTRUM	TRADE £19.95	NOW £14.95
★ COMMODORE 64	TRADE £24	NOW £19
★ BBC B STD BRD	TRADE £30	NOW £25
★ AMSTRAD 464	TRADE £30	NOW £25
★ ELECTRON	TRADE £25	NOW £20

EUROPE'S LEADING COMPUTER REPAIR CENTRE



...AND UNBEATABLE DISCOUNTS ON ALL COMPONENTS!!!

★ With over £500,000 worth of spares in stock, we can meet many of your specialised requirements. We've listed a few examples and for anything not displayed just call us and we'll quote immediately inclusive of first class post.

SPECTRUM SPARES

280 CPU	250
ULA 60001	700
Power Supply	650
4116 RAMS	700
ZTX 690	75
ZTX 213	40

Keyboard Membrane

Spectrum	3.00
Spectrum Plus	8.00
Metal Templates	3.00

COMMODORE SPARES

6510 Processor	12.00
6525 CIA	12.00
6581 Sid Chip	15.00
901225 Graphic ROM	10.00
901226 Basic ROM	10.00
901227 Kernel ROM	15.00
906114 House Keeper	10.00
6569 - VIC	18.00
4164 RAMS - Memory	1.00

Power Supplies

C64	19.50
C16	15.00

All the above prices include VAT but please enclose a further £1.50 post and packing on all component orders.

HOW TO CONTACT US

★ For quotes on computers not listed or on any component, telephone 0276 66266. (Quoting POP/4010).

★ To send us your micro for repair, mail it securely packed, accompanied by cheque, postal order (made out to Verran Micro Maintenance Limited) or quote your Access or Barclaycard number. And to obtain your special discount quote POP/4010.

Verran

Verran Micro-Maintenance Limited, Unit 2H & 2J, Albany Park, Frimley Road, Camberley, Surrey GU15 2PL. Telephone 0276 66266.

input power change switch, as seen on many TV sets. If it has one then it should cover 220V. It is quite possible that the machine will work on 240V even though the specifications say 220 since it is within 10% of the operating range, and the internal voltage regulator should take care of the difference.

I am not absolutely certain of the above and perhaps your best bet would be to write a nice letter to the dealer you intend to buy from, asking whether the machine will work on the UK Mains. Or, perhaps one of PCW's readers can help?

Master mouse

Robert McBride, of Dunfermline, File, writes:

Q I have a Kempston mouse and mouse interface that I use with my Spectrum 128 (original black version). I also have a BBC Master 128.

I wish to connect my mouse to the Master, obviously the interface that connects to the Spectrum will not work with the Master. The mouse has a D-type connector (same type as those used on the Atari style joysticks) but I don't have the pin configuration and Kempston are no more.

If it is useful, I have access to the ROM which controls the AMS mouse that is designed for the BBC.

I have heard of a company that produces a special attachment for connecting Atari joysticks to BBC computers. I unfortunately do not have the name of this company.

My problem could be solved when I purchase my Master 512K upgrade as this comes supplied with a mouse. Unfortunately it does not appear to function properly when in 128 mode. I have heard that because of a difference in clocking (or whatever) the pointer speeds across the screen. If I can solve this problem then I don't need to connect my Spectrum mouse to the Master as I could use the 512 mouse in 128 mode.

PS. One imagines you at your office surrounded by an array (tidy of course) of computers and technical 'bits and bobs'. Is this the situation?

A Mice all tend to work in the same way and hopefully, the Kempston is no different. Two encoder wheels are used to detect the motion of the mouse by breaking a light beam (see diagrams). In practice, two light beams per wheel are needed to sense the direction. If one beam is offset from the other, turning the wheel in one direction causes one pulse to come before the other, the other direction reverses the sequence. Counting the number of pulses gives the amount that the mouse has been moved. There are four connections for the wheels, one for each of the buttons, and a +5V and ground for power to the light beams and their associated circuitry.

On the BBC, the AMX mouse connects to the user port and uses the following:

XB YB XA NC YA NC NC LB MB RB +5 NC OV NC NC NC NC NC NC

Looking into the socket of the user port.

XA and XB are the outputs of

the light barriers for the X axis, YA and YB are the same for the Y axis, and the L/M/RB are the left middle and right buttons.

Ignoring the button for a moment, it should be possible to open up the Spectrum mouse and find the connections for the X and Y light barriers, these go to the connector as shown above. You will also need to find the 5V line that powers the comparator (top right pin of chip is usually the supply) if there is only one button then connect it to the left-hand connection as this is the most commonly used. The X and Y movement and button can be read from the user port bits 0, 2 and 5/6 respectively (&FE60 on a BBC B) and the IFR of the user VIA, bits 3 and 4 for X and Y (at &FE60+13 on a BBC B). If you connect the mouse you have up in the way shown then it may well work with the AMX system. If not then you will have to write your own machine code to cope with decoding the movements.

One of the problems you may find is that the number of holes in the movement disks are different. This will cause problems with the step size, and the problem you mentioned with the 512 mouse will occur. What you need to do is scale the number of pulses per step so that they fit nicely as a pixel to pixel movement. If the mouse is moving too fast then you will have to count two or more pulses for one. If it is too slow then move two or more pixels at once. To do this with an existing system, you will need to redirect the port access routines and make the computer believe that things are slightly different ie, send corrected values to the routine instead of the actual ones. Hopefully this is of some help and you get the thing working.

In answer to your last question, all I can say is that my desk sometimes gets rather crowded with all the letters and machines.

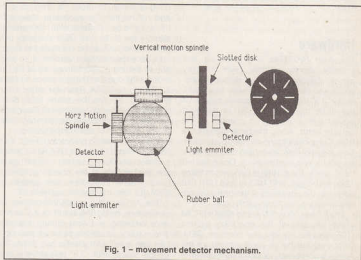


Fig. 1 - movement detector mechanism.

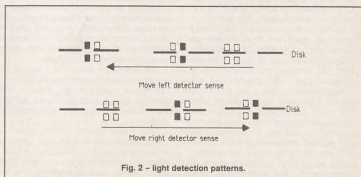


Fig. 2 - light detection patterns.

THE NEW WORLD

The age of the 8-bit micro, of tape recorders, of microdrives, of 64K memories and attribute problems is slowly coming to an end. For the adventurous of spirit, those who wish to be at the forefront of microcomputing technology, now is the time to cast out that ponderous 8-bit computer and invest in the next generation. The choice is between two 16-bit 68000 processor machines, the Atari 520 STFM and the Commodore Amiga A500, and the 32-bit RISC based Archimedes A305, recently unleashed by Acorn.

Which one is the best buy though? In a sense that is a question only the prospective purchaser can answer, but in this article we examine the pros and cons of each system.

Hardware

The Atari 520STFM is a compact and stylishly chunky machine, with its grey casing, diagonal ventilation slots and function keys, cursor and numeric key pads, built in 3.5" disc drive and power supply. Of the three machines the ST is the best served with interfaces to connect to the outside world. Along the back there is the RGB/Composite/Mono monitor port, television, external disc drive, hard disc, Centronics printer and modem ports. Down the left hand side is the cartridge port, which takes 128K cartridges, and MIDI In and MIDI Out ports. On the underside of the computer are two awkward mouse/joystick ports.

The ST has 500K RAM, and 192K of ROM which consists of the operating system (TOS) and the friendly user interface, GEM. GEM may not be as sophisticated as the Amiga's workbench, or as fast and colourful as the Archimedes WIMP software, but it works well and because it is in ROM is fully integrated with the operating system.

One of the best features of the ST are the graphics. There are three modes, each consuming 32K of RAM. Low resolution is 320 x 200 pixels with 16 colours, selectable from 512. Medium res is something of a compromise with 80 columns but a low vertical resolution, 640 x 200 pixels in four colours to be exact. High resolution is 640 x 400 pixels and requires the use of either Atari's own monochrome monitor, or an extremely expensive multi-sync monitor (like the NEC Multisync). It is a shame that to display all modes needs two monitors.

The sound chip is not one of the ST's selling points, but it has been treated

somewhat unfairly. There are three channels each one covering eight octaves. If the sound chip hasn't sold the ST then the provision of MIDI ports certainly has. Unlike the other two machines the ST specialises in this area and has endeared itself to musicians.

As far as Basic goes, the one supplied on disc by Atari is something of a joke. The thing is awful, torturous to program with, and not something anyone in their right mind would do by choice. With file handling taken care of by the GEM desktop only programmers would be interested in Basic, and because the Atari version is so bad, one of the many alternatives would be the order of the day. For these reasons, in Table 1 I have used GFA Basic for comparison purposes. As can be seen, GFA Basic compares well with Archimedes Basic until we get to the graphics department. Then the ST's lack of custom chips shows.

Still, if you want to program in Basic, then I'd recommend Glentop's GFA Basic, which provides excellent graphics support, good low level access to the operating system, good control structures, and access to GEM. It's also the fastest available ST.

The Amiga A500 is not the prettiest of computers, being the result of a Commodore reboxing and cost cutting exercise. The result is much the same as pouring a pint into a half pint plastic bag. While the double sided, 880K, 3.5" disc drive is built in, the large power supply and optional TV modulator are external. If you keep the power supply on the floor, it is out of the way but unfortunately this isn't practical since Commodore decided to put the on/off switch on it. You start and end Amiga sessions crawling on the floor.

The interfaces lining the back of the machine are not as numerous as on the ST, but this is what you get anyway: RGB monitor, parallel port, serial port, left and right audio out, and two mouse/joystick ports.

The Amiga desktop WIMP system is called Workbench, and, oh woe, comes on a disc. When you first switch on the A500 it cheerfully demands that you insert Workbench before it will do anything. Now this



wouldn't be so bad if all it did was consume some of the 500K memory and then do its job, but no, there's worse to come. When you want to do specific tasks, like copying files from one disc to another, you have to

PCW Test	GFA Basic
1	0.11
2	0.395
3	1.02
4	1.01
5	1.09
6	1.76
7	2.845
8	2.945
Average	1.397
Flood Fill (low res)	2.3
Circle (r75)	0.05
Solid Circle	0.165
Box	0.01
Solid Box	0.03

IS REALLY HERE

Popular's Technical Editor, Duncan Evans, takes a long hard look at two 16-bit microprocessors, the Atari 520STFM and the Amiga A500, and the 32-bit, RISC-based Acorn Archimedes A305, and finds three excellent machines whose relative success in the market will probably depend on price.

insert Workbench before the thing will go. Having moaned enough, it is a sophisticated WIMP system, it is for the most part quick, and it's more integrated than the Acorn flavour. Compared to GEM though, it

really can be a pain with only one drive.

Amiga graphics are what have made the machines name, and it's not surprising really. There are five modes, but unlike the other two micros in this survey, they only apply to a specific screen, which you have to create yourself.

The Amiga allocates a private bit map for a screen in memory. It has an ID number from 1 to 4 which enables windows to appear in them, a width of 1 to 640 pixels, a height of 1 to 400 pixels and a depth of 1 to 5 planes, which determines the number of colours available. A code, with values of one to four, determines whether the screen will be low or high resolution and interlaced or not. An interlaced screen doubles the number of vertical lines, however, on TV's, and on some monitors the screen does tend to flicker. When using Amiga Basic, interlaced screens flicker even with the official Commodore 1081 monitor.

The usual screen displays are thus 320 x 200 in 32 colours, 320 x 400 in 16 colours, 640 x 200 in 16 colours and 640 x 400 in 16 colours. This, as I'm sure you're aware only adds up to four modes. The last one is the Hold And Modify (HAM) which can display all 4096 of the Amiga's colours, as long as they aren't moving. *DigiPaint* is one recent product which uses a modified HAM mode to enable you to draw and paint in 4096 colours, something not even the Archimedes can do.

An interesting point to note is that a user defined screen can be larger than the physical monitor screen, and since there is some unused space at the bottom of the display it means that all those vertical resolutions of 200 can easily become 256.

Animation should be very fast and smooth, not that you'd have known, going by some of the software on sale, because of the custom chips inside the Amiga. Denise provides the resolutions and eight hardware sprites, Fat Agnus does the blitting, and Gary keeps them all under control.

Sound is handled by the custom chip Paula, which provides four voices of sound configured as two stereo channels, nine octaves and complex waveforms. Not only can you have superb music and sampled

sounds coming out of this machine, but also speech. Yes, there's also built in speech synthesis. Cicero it isn't, but it certainly matches up to the dulcet tones of say, Francis Jago.

Amiga Basic, like Atari Basic, is supplied on disc, but unlike that dismal language, is quite usable. Although there aren't that many graphic commands, what there are are quite powerful. Circles, pentagons, boxes, flood fills, rectangular GETs and PUTs, and sprites are all available. The sprite handling and animation in particular are very well handled with interrupts, direction velocity and collision detection. Creating pull down menus and reading the mouse status is also quite straightforward.

With SOUND and WAVE you take control of the stereo sound channels to provide much better music than you get on the ST.

There are two bad points. Structured programming receives scant attention with only a WHILE...WEND. No procedures, DO...LOOP or REPEAT...UNTILs. The other is that Amiga Basic is relatively slow. Have a look at Table 1. For coefficients especially the Amiga crawls along. Where it does pick up speed is on the other graphic commands, as this is where the Fat Agnus picks up the tab.

The Acorn Archimedes A305 is the newest of the three computers and has aroused enormous interest due to it being RISC based and so is rather quick.

The machine has $\frac{1}{2}$ megabyte of RAM, of which 700k is available to the user, and an incredible $\frac{1}{2}$ meg of ROM as well.

Physically, the A305 is undoubtedly the largest of the three systems and comes in the form of a large box containing the circuitry, a whirling fan, the 640k 3.5" disc drive and power supply, and a large external keyboard. I hope that only the review model (yes there's only one and it's been round half the computer industry) has a keyboard that is unresponsive and horrible. I wouldn't like to buy one that was that bad.

Residing on the rear of the circuit box are analogue RGB, mono video, headphones, RS232, Econet and parallel printer. Given that the original BBC series was well equipped with interfaces, this collection is more than a little disappointing. There are not any joystick ports either.

While the Amiga has great graphics, the Archimedes, in its own way, are just that bit better. There are some twenty modes, have a look at Table 2 to see them all. Note that the last three can only be used on monitors like the NEC Multisync as they do not

Amiga Basic	Basic V
0.398	0.07
1.94	0.36
3.94	0.81
4.64	0.74
5.04	0.85
8.86	1.48
13.76	2.43
17.68	1.71
7.032	1.056
0.44	0.65
0.18	0.01
0.459	0.01
0.007	0.0065
0.007	0.0065



Most interesting are the sprites. A program on the Welcome Disc lets you define sprites as large as you like, until you run out of memory. Once you've saved them, you can access your sprites with "SCHOOSE" name to select it and a PLOT or VDU 23 command to display. Given the speed of the Archimedes the possibilities in this area are exciting for Basic programmers.

Hardware Conclusion

All three computers are excellent machines, but they each have faults. The ST is very good, but the Amiga is better, and the Archimedes is better still. The difference between the Amiga's graphics and Archimedes' is not that great, and in the form of the HAM mode the Amiga is demonstrably better. Which is the better machine for animation has yet to be seen as little software exploits the Amiga's capabilities fully, and there isn't any for the A305.

Software

In this field the clear winner is the Atari ST. As the oldest machine software producers have had longer to cater for the machine. There is also the fact that there are around four times as many ST's as there are Amigas so people tend to write for this larger market more. There are over 500 packages for the ST, everything from arcade games to art packages, languages, decent word processors and music/MIDI products. The Amiga on the other hand, is not so well served, in this country. Only recently has a good quality word processor, Word Perfect, appeared. Graphics packages aside, the Amiga is approximately six months behind that of the ST.

The Archimedes is a new machine so the software scene is obviously barren but various BBC supporting software houses have already pledged their support.

Pricing

The clear winner again is the ST. At only

£300, or less from the majority of dealers, this is everyone's chance to own a 68000 processor based, 500k RAM machine with GEM user interface and quality graphics. Outstanding value for money.

The Amiga, at an official price £575 was still too expensive for most people so Commodore, realising this, introduced a £100 off voucher scheme to C64 owners. This was effectively a price cut since anyone with any sense could either get hold of a voucher from a friend, or get one out of the Commodore magazine which also ran the offer. The Amiga is good value for money, but still too expensive to appeal to many non C64 upgraders.

The Archimedes A305, at over £900 doesn't come cheap, but then the best never does. However, it is still far too expensive for mass appeal. On one hand it is a good thing that Acorn have produced this machine because of the BBC/educational tie which will guarantee some sales. But Acorn have a reputation for not cutting prices, and the Archimedes certainly needs it to achieve decent sales outside the education market.

Overall Conclusion

If all three machines had been launched yesterday and all cost, say £400 then it would be easy to recommend the Acorn Archimedes. All fantasy of course, the reality is that the ST is cheapest of the machines, and at £300 will outsell the others by a corresponding factor. If you're on a limited budget then the 520STFM is the obvious choice.

Commodore have very nearly left it too late for the Amiga. It would have been a great shame if they had because the Amiga was the machine everyone wanted to own a year ago. That mantle will, I think, be shortly taken up by the Archimedes. If Acorn cut the price of the A305 to £600 then Commodore would be very hard pressed, but at least in the foreseeable future, they won't. Commodore should take this as a warning shot across the bows and officially cut the Amiga A500 price to £400 or £450 now.

Enough, hypothesizing. If you can afford an Amiga A500 now, and you have a love of advanced and sophisticated technology then it is worth buying the machine. At the PCW show and in its aftermath there will be something of a surge in Amiga software so only a little patience is required.

Perhaps your bank account is so bulging that you can afford an Archimedes, but only a real computer enthusiast could justify buying one at the present time. With almost nothing to run on the machine yet, except Braben's Lander demo which contrary to rumour is written in machine code, not Basic, it will be some time before software support reaches even Amiga levels.

So there you have it. You pays your money, you takes your choice. For the record, I own a 520/STFM, an Amiga A500 (bought in that order), and if I had the readies I'd be in the queue for an Archimedes as well. (We obviously pay you too much, Ed.)

produce a usable picture otherwise. The first eight modes (0-7) are standard BBC modes. The speed at which even a RISC machine can scroll a 160k remains to be seen, but if it can do it quickly and smoothly then that really will be something special.

A point to note about the 256 colour modes is that you have 64 base colours to choose from and then specify one of four tints, which occasionally makes it a little tricky getting the desired colour.

Sound could have been extremely good, with the eight channels and stereo capability. You can even position how far to the left or right you want a channel to sound at. The disappointing aspect is that it only covers six octaves. Start to use more than five channels as well, and you'll find the machine starting to noticeably slow down.

Acorn Basic V is supplied on ROM and, even though the A305 has a mouse and WIMP software, it is most definitely not a WIMP system. The desktop program is written in Basic. And although it is both fast and colourful it is something of a gimmick. It is of course on a disc, and is simplistic, and poorly integrated with the operating system. Like the WIMP program for the Master Compact before it, it is rather dull.

Basic V is the latest incarnation of BBC Basic and supports the usual procedures and control structures. The multi-function PLOT command is still there, providing point plotting, line drawing, triangles, right and left line fills, solid rectangles, circles (solid or empty), block copy and move (equivalent to GET and PUT), ellipses and sprite plotting.



The leading North West
Specialist ATARI Dealer



ADBROKE
COMPUTING
INTERNATIONAL

33, Ormskirk Road
Preston, Lancs.
Tel: (0772) 21474
Mail Order: 27236 or
Bul/Board 6pm to 9am



This Company has given years of full support to ATARI users Countrywide from their retail shop premises at Ormskirk Road, Preston. Now from their NEW Mail Order Depot they can offer the same Excellent service to all Mail Order Customers.
All Software and Hardware is fully tested prior to selling. This ensures Customers receive working items so that returned goods, and all the attendant frustration are a thing of the past. All Hardware is supported by our own 'ON SITE' engineers, therefore quick turn round on all repairs is Guaranteed. All prices quoted are fully VAT inc. and there are no 'hidden extras', what you see is what you get. Prices include delivery. Items despatched same day. Ring for latest price changes.



520STM Packages.....PHONE



1040STF+Mouse
+Softwr.....£480.00
1040STF+Mouse
+Hi-Res Mon
+Softwr.....£580.00
1040STF+Mouse
+Colour Mon
+Softwr.....£780.00

1Meg Upgrades are available for the 520STM. These are our own design and are very simple to fit. Using the same board, all ST's can be Upgraded to 2mg or 4mg. So no need to sell your 520 just Upgrade to a Mega ST using our board.

1Meg Upgrade (STFM).....£70.00
1Meg Upgrade (All ST's).....£135.00
2.5Meg Upgrade +Board.....PHONE
4Meg Upgrade +Board.....PHONE

If any of the above Upgrades are purchased with Hardware then deduct £5 from total.

PRINTERS

Dot Matrix
Star NL10.....£240.00
NL10 Sheetfeeder.....£55.00
National Panasonic.....PHONE
MP165.....PHONE
MP135.....PHONE
LX86 Tractor Feed.....£19.00
LX86 Sheetfeeder.....£55.00
LQ800 24pin D/M.....£525.00
All Others.....PHONE



	3 1/2 D/S D/D	5 1/4 D/S D/D 46TPI
Per Disk	£1.99	£0.80
10 Disks	£16.00	£6.50
10 Disks+Plastic lib case	£17.50	£7.50
100 Disks+Cases	£150.00	£50.00
500 Disks+Cases	£650.00	£280.00

All Disks are covered by an unconditional lifetime guarantee.



We also stock a full range of quality P/D ST Software at £3.99 per Disk Send SAE for catalogue.



Our ATARI trained engineers will repair all Hardware in minimum time at competitive rates. Please ring for a quotation. All repairs carry a 90 day warranty.

NEWLY IMPORTED

Imager. Easily fixed to your printer it will digitise anything placed in the printer and save to Disk to be used with Degas, Elite etc. RRP £99.99.

All Printers, Disk Drives etc supplied with cables etc. NO HIDDEN EXTRAS

Mega ST's.....PHONE
Laser Printers.....PHONE
PC Clones.....PHONE

DUST COVERS

Computers.....£3.99
Monitors.....£4.99
Disk Drives.....£2.99
Printers.....£7.99

IF IT'S AVAILABLE we have it!
Send SAE for full catalogue.

All Dedicated books and mags in stock



520STF+Mouse
+Softwr.....£285.00
520STF+Mouse
+Softwr
+1Meg Upgrade.....£350.00
520STF Mega Pack
520STF+Mouse
+Softwr
+1Meg Upgrade
+1Meg 2nd Drive.....£485.00
Equal to 1040STF+1/2Meg Drive
+Modulator

For Med Res Col Mon add.....£299.00
For High Res Mono Mon add.....£129.00

All Hardware is covered for 12 months by our service dept. and is tested prior to delivery to assure satisfaction.



We have a complete range of Software in stock and fully tested.

We also stock a full range of ATARI 8Bit Hardware and Software including the new XE range. Please ring for prices

PERIPHERALS

Triangle 1mg D/Drive.....£139.00
Triangle 2x1mg D/Drive.....£229.00
Pro Draw Graphics Tab.....£310.00
Cumana 1Meg D/Drive.....£139.00
All Drives come complete with Software

HARD DRIVES

Atari 20mg.....£550.00
Triangle 20mg Hard Disk.....£669.00
Supra 20mg.....£550.00
30mg.....PHONE
60mg.....PHONE

Any Software problems? Queries? give us a ring we usually have the answer

FOR MORE INFO CALL ON THE ABOVE NUMBERS OR SEND SAE AND STATE FULL REQUIREMENTS

TO ORDER Simply send, or phone your order, stating Full Name, Address, Visa or Access Nos, Cheque or Money order. Make payable to Ladbroke Computing International, 33, Ormskirk Road, Preston, Lancs. PR1 2QP.

ON THE SIMPLE OF SPRITES

Writing good games graphics isn't simply a matter of knowing how to program. Kenn Garroch observes that cunning artists can fool the eye into believing a little is a lot.

A good 90% of all computer games depend on graphics, and fast access to screen. The only effective way of doing this is from machine code, ie taking advantage of the fact that MC is the only way to get peak performance from a machine.

At first sight, programming in machine code looks awfully difficult and complicated, and at times it is. However, to make things run as quickly as possible programs should be as simple and/or elegant as possible. Generally, the simpler the better. It's mainly a matter of knowing what the microprocessor is capable of, which instructions do what, how fast they do it, and which is the best way to string them together to get a routine that fits the classic trade-off - space vs speed.

In days gone by the major problems facing the games programmer were lack of space and the comparative slowness of 8-bit processors when manipulating large chunks of information. In the main, the problems were solved (and keep on being solved) and considering the quality of some of the games available on the Amstrad, Spectrum and C64 machines, solved quite well.

No limits

Nowadays with the advent of larger memory capacity and more sophisticated microprocessors, producing games of quality comparable to those of the past is easy. The thing to remember is that none of the more recent machines, ST, Amiga, Archimedes, Mac etc have yet been pushed



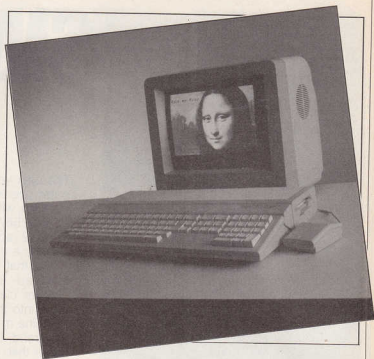
"The thing to remember is that none of the more recent machines, the ST, Amiga, Archimedes, Mac, etc, have yet been pushed anywhere near their limits as far as amazing games are concerned."

anywhere near their limits as far as amazing games are concerned - the future's so bright... well get the shades out, you'll need 'em.

On the table

The trade-off between space and speed is due to the fact that most machine code routines can be made to run a lot faster if they look up information in tables, instead of working it out from scratch every time. The drawback is that tables take up valuable memory, the trick is to use tables where speed is an absolute necessity, and work the rest out as quickly as possible. The other trick is deciding which is the best method.

ART



There are quite a number of tricks that can be used to make graphics look a lot better than they actually are. The first is to remember that the human eye has a noticeable (or unnoticeable, if you prefer) persistence of vision, it remembers what it has seen even when the image is no longer visible. Cinema films work in this fashion, each picture frame of the film changes only 25 times or so a second. Anything faster is pretty well unnoticeable, anything slower appears to flicker. It depends on how far away the picture is to a certain extent since flicker is more obvious in the front row.

This persistence and the fact that the mind tends to imagine movements that

If things are moving faster than this then there is redundant processing going on since things are moving to places where they will never be seen. Again, it's simply a matter of timing and judgement to get the best effect.

difference it makes to have someone who is actually an artist to do the artwork instead of the programmer who may, or may not, be good at drawing.

"Another trick is to note that the video display is only updated 50 times a second. If things are moving faster than this they are moving to places where they will never be seen."

Mix and match

Graphics for games tend to fall into categories that can be mixed and matched at will. Probably the most famous are sprites - discrete blocks of graphics that are moved around the screen and possibly animated. These are perhaps the most commonly used graphics effect since they provide an easily programmed basis for animation.

Scrolling - vertical and horizontal movement of the whole or a section of the screen as used in many platform games, shoot 'em-ups, chase games etc.

Vector graphics - calculated two or three dimensional points connected by lines or filled and projected onto the screen (mathematically, not physically), anyone who has seen *Elite*, *Starblazer*, or *Lander* (on the Archimedes) has seen the spectacular effects possible via this style. Finally, artwork - artistic backgrounds that can impress much more than any amount of fancy programming. This has only really come to the fore in the last three years or so and many programming houses have seen the

"Instead of moving a sprite one pixel at a time, eight could be used to give the appearance of really fast movement. Find the limit at which things flicker."

don't actually occur means that moving sprites and such can be done much faster than is necessary, at first sight, instead of moving them one pixel at a time, eight could be used to give the appearance of a really fast movement. The advantage is that considerable processor time is saved and can be used elsewhere. There is a limit at which things tend to flicker, the trick is to find this limit and move things at speeds just under it.

Another trick is to note that the video display is only updated 50 times a second.

It seems amazing that such a variety of games can be constructed from four simple ideas but basically that is all there is to it. The mark of a good game, graphically speaking, is one in which there is a slickness or sophistication about the display that leaves you thinking "How did they do that!". Obtaining the right effects is a matter of knowing what the machine is capable of, experience, and imagination.

For the remainder of the series I shall look at the individual concepts, sprites, vector graphics etc, and see how they are used.

SWEET



The past year has seen Amstrad's computer operations going from strength to strength, with a worldwide total of 750,000 PCW8256/8512 sold, and 450,000 PC1512 sold between last September and the end of June.

But that time has also seen Amstrad involved in controversial claim and counter claim as it tried to broaden its base into the business market. The new machine marks a further development of this trend, being aimed at the typewriter, rather than any computer market.

Last week's launch of the PCW9512 offered a rare opportunity for a face to face encounter with the man behind the beard – Alan Michael Sugar. John Brissenden came back with this report.

The past year has seen Amstrad Consumer Electronics grow to dominate the UK volume computer industry, to a point where press and public interest in the activities of Britain's most profitable company has never been greater.

So what about this new PCW then? We asked Alan a few salient questions last week, about the new machine, about the PC1512 and 1640, and about the computer market in general.

First of all he ran through the major differences between the 9512 and the old 8000 series machines – the addition of the daisywheel printer is the most important – and explained the different market the new machine is aimed at.

"If you can criticise a product that you sell three-quarters of a million of, it covers the criticism of the previous machine. It covers the areas that excluded the previous machine from the real, 'serious' end of wordprocessing," he says. But what constitutes "serious"?

"The lawyers and the accountants who really love the idea of the PCW, but couldn't really send their clients' letters printed with the dot-matrix format, and to whom, therefore, the quality of the printing was essential.

"The printer has also been improved in that you have a very wide carriage, which



enables you to put the 15" tractor paper on. I'm not quite sure why one needs to put 15" tractor paper on, but then again this is the Amstrad way, this is what the people have asked for, and this is what we've given them."

But if the new machine is so wonderful, where does that leave the 8000 series? Amstrad continues to deny that the 8256/8512 is being discontinued, and only

last month announced large price cuts on both. But will they still sell, and will they be dropped shortly?

"We're quite flexible as far as that's concerned – we'll make it as long as it sells. We moved the price down to £299 last week, and the reaction to it so far has been very, very good. As far as we're concerned the 8256 is around as long as there's a market for it.

"Any market where we see a possibility of selling at least 3-400 pieces a week of anything, we're interested in. Now if that market's declining or not is irrelevant, because if it declines to something like 55



FUTURE



for 2,000 of your machines for this particular application, and we're not only buying these machines, but we're buying the all-round service of coming in and setting up."

"Now we're not in that business - we are in the business of supplying companies with these machines. We won't ever supply them with 2,000 pieces at one go, because they don't want 2,000 pieces at one go. But it will be evaluated by whoever buys typewriters and wordprocessors in the organisation and put on the purchase list.

"So yes, they will be used in large corporations, by the sheer fact that the price of the product enables the user not to have to go to a board meeting to get permission to buy one. So if we were inclined to do so, if we went to a corporation and actually asked somebody how many Amstrad machines you have in your entire company, the figures would be shattering. But ask them how many they bought in one consignment, and they wouldn't know."

As far as the 9512 itself is concerned, Sugar reckons that the additional features which mark it from the 8000 series will be sufficiently attractive to justify the extra £200 people will have to pay. But about December, the 9512 is expected to overtake the 8000 models in sales.

Amstrad has spent most of the past twelve months embroiled in controversy - not to mention litigation - over the technical failings and commercial problems of the PC1512 and 1640. Sugar's response to claims that the 1512 is dead, and likely to be

pieces per annum, well, we'll respectfully butt out."

An example of this philosophy is expected sales of the Plus 2 and Plus 3 Spectrums of 200,000 this Christmas alone. "Very similar to the suntan lotion market" is how Sugar describes the vast seasonal sales of this ageing 8-bit technology.

As far as the new machines - and the PCs - are concerned, a lot of criticism has



been levelled at Amstrad's perceived failure to break into the corporate market, particularly in the States. The PC1640 doesn't seem to have done the trick, either.

"Well, this is a touchy subject, this corporate account thing. I think the terminology really is not so much corporate accounts as business users. A company will approach IBM and say: 'We have a use



"First of all, there was the bold, going out and buying it, sitting down and punching away. Then there was the less bold, observing that the first one was using it. We're now looking for the stingy."



shelved, is characteristically dismissive.

"There's been so much flak and nonsense spoken about the 1512 supposedly being dead and all that nonsense. It is nonsense, because I can tell you that right now in the factory we're producing more 1512s than we are 1640s.

"Quite honestly, that perhaps wasn't the initial thought when the 1640 was conceived in the very early part of this year. But what we have identified is that the home computer market is becoming more serious. It's coming away from the Sinclair end of the market, the joystick and games playing type end of the market," Sugar adds, before making his position on the MS DOS/Amstrad debate very clear.

"When we consider that people were paying £399 not so long ago for an Amstrad computer, which was basically a 6502 product with just a keyboard, it obviously sparked off in our mind the idea that the 1512's position should be that of a home computer. Logically if you buy it for your son or your daughter, they may as well use a machine which they can get some use out of later on in life. That is our new kind of marketing policy on the 1512."

That sounds OK, if you ignore the fact that the initial "compatible with you know who" ad campaign was specifically targeted at business users, and never mind that it took a stunning display of apathy on the part of the business market before this new marketing policy was considered.

"The potential purchaser also thinks to himself, 'Well, I remember the Sinclair that I bought four or five years ago, which is now tucked under the bed somewhere. I bought it with a little bit of interest thinking that maybe I may be able to use it myself.' Well they found out very quickly that it was totally useless, but buying the 1512 is not

really useless for the chap if he desires to take home some of his work. So there's another angle on why the 1512 is now poised in the home computer market."

Is the new PCW, together with the re-priced 8000 models, part of an attempt to exponentially develop the wordprocessor market, or does Sugar reckon most people will merely upgrade?

"Price always helps on a major breakthrough. Price tips the scales - £299, it sparks off another chain of consumers. So,

yes, maybe we could expect to expand the market a little bit more. Lots of people are still hovering around, seeing that their friends are using these machines, and £299 comes just low enough to tip the scales to make them buy one.

"We found with the PCW consumer that there was the bold, first of all, going out and buying it, and sitting down and punching away, and then there was the less bold observing. And then the less bold observed that the first one was actually using it. We're now looking for the stingy."

One possible problem for Sugar in the US - always perceived, rightly or wrongly, as a make or break market for computer manufacturers - could be the continued use of products based on the ageing and weak Z80 processor. Is this causing a credibility gap?

"The funny thing is that no one asks what processor it's got. My famous answer of course is an elastic band, because really the type of consumer that's using the 9512 is not interested in what's inside it. And that's our target audience.

"The 8256 was somewhat of a disappointment in America in the beginning, because the marketing philosophy was wrong. It was being marketed as a computer and a word processor together. The minute you mention the word 'computer' they want a 386 Intel processor sitting in it. You mention a Z80, and they just walk away. And that's why we deliberately market this as a wordprocessor."

So what of the future? This week sees Amstrad's end of year results, which are expected to be even more phenomenal than last year's. And then the rumour machine grinds on, with talk of satellite TV, laser printers and the like. But watch out for that 80386-based PC in the New Year.



Blackwolf

Tim Myatt

Here we go with the concluding chapter of the *Blackwolf* saga. This arcade style game features an expanded UDG set and action-packed gameplay.

2600ENDPROC

2610DEFPROC FRONT1

2620VDU4: X=X*64: Y=1024-(Y*32)

2630DRAW=X+30 TO X+105STEP25

2640IFPOINT (AX, Y+30)=2:FR2=9

2650IFPOINT (AX, Y+30)=3:FR2=9

2660NEXTAX

2670IFFR2=9: Y=Y*2+1:ENDPROC

2680VDU3: X=X*64: Y=1024-(Y*32)

2690VDU3: X=X*64: Y=1024-(Y*32)

2700VDU5: GCOL0,1

2710MOVEX, Y:VDU128:VDU129

2720GCOL0,2:MOVEX+15, Y+22:VDU132

2730MOVEX+100, Y+5:VDU130

2740GCOL0,7:MOVEX+32, Y+20:VDU131

2750GCOL0,5:MOVEX+22, Y+35:VDU133

2760SOUND4,-5,100,1

2770WZ=1:ENDPROC

2780DEFPROC FRONT2

2790VDU4: X=X*64: Y=1024-(Y*32)

2800DRAW=X+30 TO X+105STEP25

2810IFPOINT (AX, Y+30)=2:FR2=9

2820IFPOINT (AX, Y+30)=3:FR2=9

2830NEXTAX

2840IFFR2=9: Y=Y*2+1:ENDPROC

2850VDU3: X=X*64: Y=1024-(Y*32)

2860VDU3: X=X*64: Y=1024-(Y*32)

2870VDU5: GCOL0,1

2880MOVEX, Y:VDU128:VDU129

2890GCOL0,2:MOVEX+32, Y+5:VDU136

2900MOVEX+59, Y+22:VDU134

2910GCOL0,7:MOVEX+32, Y+15:VDU131

2920GCOL0,5:MOVEX+42, Y+35:VDU135

2930SOUND4,-5,100,1

2940WZ=0:ENDPROC

2950DEFPROC BACK1

2960VDU4: X=X*64: Y=1024-(Y*32)

2970DRAW=X+23 TO X+103STEP25

2980IFPOINT (AX, Y-5)=2:BK2=9

2990IFPOINT (AX, Y-5)=3:BK2=9

3000NEXTAX

3010IFBK2=9: Y=Y*2+1:ENDPROC

3020VDU3: X=X*64: Y=1024-(Y*32)

3030VDU3: X=X*64: Y=1024-(Y*32)

3040VDU5: GCOL0,1

3050MOVEX, Y+30:VDU138:VDU137

3060GCOL0,2:MOVEX+12, Y+15:VDU140

3070MOVEX+60, Y+25:VDU141

3080GCOL0,7:MOVEX+32, Y+20:VDU131

3090GCOL0,5:MOVEX+22, Y+35:VDU144

3100SOUND4,-5,100,1

3110WZ=1:ENDPROC

3120DEFPROC BACK2

3130VDU4: X=X*64: Y=1024-(Y*32)

3140DRAW=X+23 TO X+103STEP25

3150IFPOINT (AX, Y-5)=2:BK2=9

3160IFPOINT (AX, Y-5)=3:BK2=9

3170NEXTAX

3180IFBK2=9: Y=Y*2+1:ENDPROC

3190VDU3: X=X*64: Y=1024-(Y*32)

3200VDU3: X=X*64: Y=1024-(Y*32)

3210VDU5: GCOL0,1

3220MOVEX, Y+30:VDU138:VDU137

3230GCOL0,2:MOVEX+15, Y+25:VDU142

3240MOVEX+60, Y+15:VDU139

3250GCOL0,7:MOVEX+32, Y+20:VDU131

3260GCOL0,5:MOVEX+50, Y+35:VDU143

3270SOUND4,-5,100,1

3280WZ=0:ENDPROC

3290DEFPROC RIGHT1

3300VDU4: X=X*64: Y=1024-(Y*32)

3310DRAW=X+20 TO (Y+20)STEP20

3320IFPOINT (X+90, AZ)=2:R2=9

3330IFPOINT (X+90, AZ)=3:R2=9

3340NEXTAX

3350IFR2=9: X=X*2+1:ENDPROC

3360VDU3: X=X*64: Y=1024-(Y*32)

3370VDU3: X=X*64: Y=1024-(Y*32)

3380VDU5: GCOL0,1

3390MOVEX, Y+32:VDU146:MOVEX, Y:VDU145

3400GCOL0,7

3410MOVEX+15, Y+16:VDU147

3420GCOL0,2:MOVEX+38, Y+32:VDU149

3430MOVEX+5, Y-18:VDU148

3440GCOL0,5:MOVEX+59, Y+30:VDU150

3450SOUND0,-7,100,1

3460WZ=1:ENDPROC

3470DEFPROC RIGHT2

3480VDU4: X=X*64: Y=1024-(Y*32)

3490DRAW=X+20 TO (Y+20)STEP20

3500IFPOINT (X+90, AZ)=2:R2=9

3510IFPOINT (X+90, AZ)=3:R2=9

3520NEXTAX

3530IFR2=9: X=X*2+1:ENDPROC

3540VDU3: X=X*64: Y=1024-(Y*32)

3550VDU3: X=X*64: Y=1024-(Y*32)

3560VDU5: GCOL0,1

3570VDU5: GCOL0,2:MOVEX, Y+50:VDU151:MOVE

X+39, Y:VDU152

3580GCOL0,7:MOVEX+15, Y+19:VDU147

3590GCOL0,5:MOVEX+59, Y+20:VDU153

3600SOUND0,-7,100,1

3610WZ=0:ENDPROC

3620DEFPROC LEFT1

3630VDU4: X=X*64: Y=1024-(Y*32)

3640DRAW=X+30 TO (Y+20)STEP20

3650IFPOINT (X, AZ)=2:LF2=9

3660IFPOINT (X, AZ)=3:LF2=9

3670NEXTAX

3680IFLF2=9: X=X*2+1:ENDPROC

3690VDU3: X=X*64: Y=1024-(Y*32)

3700VDU3: X=X*64: Y=1024-(Y*32)

3710VDU5: GCOL0,2:MOVEX, Y+35:VDU157:MOVE

X+37, Y-20:VDU156

3720GCOL0,7:MOVEX+20, Y+19:VDU147

3730GCOL0,5:MOVEX+32, Y:VDU154:MOVEX+32,

Y+32:VDU155

3740GCOL0,5:MOVEX-15, Y+29:VDU150

3750SOUND0,-7,100,1:WZ=1:ENDPROC

3760DEFPROC LEFT2

3770VDU4: X=X*64: Y=1024-(Y*32)

3780DRAW=X+30 TO (Y+20)STEP20

3790IFPOINT (X, AZ)=2:LF2=9

3800IFPOINT (X, AZ)=3:LF2=9

3810NEXTAX

3820IFLF2=9: X=X*2+1:ENDPROC

3830VDU3: X=X*64: Y=1024-(Y*32)

3840VDU3: X=X*64: Y=1024-(Y*32)

3850VDU5: GCOL0,2:MOVEX+35, Y+51:VDU159:MOVE

EX+14, Y:VDU158

3860GCOL0,1:MOVEX+32, Y:VDU154:MOVEX+32,

Y+32:VDU155

3870GCOL0,7:MOVEX+21, Y+19:VDU147

3880GCOL0,5:MOVEX-8, Y+20:VDU153: SOUNDO,

-7,100,1:WZ=0:ENDPROC

3890DEFPROC T1: GCOL3,1:MOVEX+62, Y+10:DR

AWX+62, Y+200:ENVELOPE3,0,0,86,-17,0,2,9,

94,-1,-65,-1,100,0: SOUNDO3,3,3,3

3900FORT=0 TO 50:NEXTT

3910MOVEX+62, Y+10:DRAWX+62, Y+200

3920FX=0:ENDPROC

3930DEFPROC T2: GCOL3,1:MOVEX+62, Y-10:DR

AWX+62, Y-200:ENVELOPE3,0,0,86,-17,0,2,9,

94,-1,-65,-1,100,0: SOUNDO3,3,3,3

3940FORT=0 TO 50:NEXTT

3950MOVEX+62, Y-10:DRAWX+62, Y-200

3960FX=0:ENDPROC

3970DEFPROC T3: GCOL3,1:MOVEX+20, Y:DR

AWX+20, Y+50:ENVELOPE3,0,0,86,-17,0,2,9,

94,-1,-65,-1,100,0: SOUNDO3,3,3,3

3980FORT=0 TO 20:NEXTT

3990MOVEX+20, Y:DRAWX+20, Y:MOVEX+20, Y+5

=DRAWX+20, Y+5

4000IFB2=1:IFH12-(Y-1)=0:ANDX1-6X:6EX

=0:VDU4:COLOUR1:VDU31,6X,H12:VDU200:VDU2

01:VDU31,6X,H12:VDU202:VDU203:FORT=0 TO

60:NEXTT:VDU31,6X,H12:VDU32:VDU32: SOUNDO,

31,6X,H12:VDU32:VDU32: SOUNDO,-15,110,2

:5X=5X*20

4010FX=0:ENDPROC

4020DEFPROC T4: GCOL3,1:MOVEX+60, Y:DR

AWX+60, Y:MOVEX+60, Y+5:DRAWX+60, Y+5:ENVELO

PE3,0,0,86,-17,0,2,9,94,-1,-65,-1,100,0: S

OUNDO3,3,3,3

4030FORT=0 TO 20:NEXTT

4040MOVEX+60, Y:DR

AWX+60, Y:MOVEX+60, Y+5:DR

AWX+60, Y+5


```

4050F1Z=0:ENDPROC
4060DEFFPROC1:VDU4:VDU31,P,Q:COLOUR130:
COLOUR7:VDU170:VDU172:VDU172:VDU172:VDU1
72:VDU167:ENDPROC
4070DEFFPROC2:VDU4:VDU31,P,Q:COLOUR130:
COLOUR7:VDU171:COLOUR1:VDU162:VDU162:VDU
162:VDU162:COLOUR7:VDU162:ENDPROC
4080DEFFPROC3:VDU4:VDU31,P,Q:COLOUR130:
COLOUR7:VDU169:VDU172:VDU172:VDU172:VDU1
72:VDU168:ENDPROC
4090DEFFPROC4:VDU4:COLOUR128:COLOUR2:VDU
31,P,Q:VDU173:VDU174:VDU31,P,Q-1:VDU175:
VDU176:ENDPROC
4100DEFFPROC5:VDU4:VDU31,P,Q+2:COLOUR7:C
OLOUR130:VDU183:VDU184:VDU185:VDU31,P,Q+
1:VDU180:VDU181:VDU182:VDU31,P,Q:VDU177:
VDU178:VDU179:ENDPROC
4110DEFFPROC6:VDU31,P,Q:COLOUR2:COLOUR1
35:VDU160:VDU161:VDU31,P,Q+1:COLOUR7:CO
LOUR130:VDU205:COLOUR135:COLOUR2:VDU163:N
=P+64:M=1023-(Q+32):VDU5:GCOL0,1:MOVEN+6
4,M-32:VDU166:MOVEN-10,M-32:VDU166:VDU4:
VDU31,P,Q+2:VDU164:VDU165:ENDPROC
4120DEFFPROC7:VDU4:GCOL0,7:VDU5:MOVEN,M:VD
U192:MOVEN+40,M:VDU192:GCOL0,2:MOVEN,M:V
DU193:MOVEN+40,M:VDU193:VDU4:ENDPROC
4130DEFFPROC8:IFBAX=0:HZ=6
4140VDU4:VDU31,HZ+1,JZ:COLOUR129:COLOUR
7:VDU197:VDU31,HZ+1,JX+1:VDU196
4150IFBAX=1:COLOUR128:VDU31,HZ,JZ:VDU32
:VDU31,HZ,JX+1:VDU32
4160BAX=1:HZ+HZ+1:IFHX11:VDU31,HZ,JZ:C
OLOUR128:VDU32:VDU31,HZ,JX+1:VDU32:BAX=0
4170IFDX=0:FORT=0 TO 100:NEXTT
4180IFXZ-HZ<2ANDXZ-HZ>-2:IFYZ=JZORYZ=JZ
+1ORYZ=JX+2PROCDEAD
4190ENDPROC
4200DEFFPROC9:VDU4:COLOUR7:COLOUR130:
FOREX=1 TO 18:VDU31,EX,Q:VDU172:VDU31,EX
,Q-1:VDU162:VDU31,EX,Q-2:VDU172:NEXTX:
ENDPROC
4210DEFFPROC10:VDU4:E=19:COLOUR7:COLOU
R130:FOREX=1 TO 5:VDU31,EX,Q:VDU172:VDU
31,EX,Q-1:VDU162:VDU31,EX,Q-2:VDU172:E=
-1:VDU31,E,Q:VDU172:VDU31,E,Q-1:VDU162:V
DU31,E,Q-2:VDU172:NEXTX:VDU31,6,Q:VDU16
B:VDU31,13,Q:VDU169:VDU31,6,Q-1
4220VDU162:VDU31,13,Q-1:VDU171:VDU31,13
,Q-2:VDU170:VDU31,6,Q-2:VDU167:ENDPROC
4230DEFFPROCDEAD:SOUND0,-15,100,3
4240VDU4:COLOUR128:COLOUR1:VDU31,XZ,YZ:
VDU202:VDU203:VDU31,XZ,YZ-1:VDU200:VDU20
1:FORT=0 TO 3000:NEXTT:VDU31,6,15:PRINT
"GAME OVER":#FX15,0
4250VDU31,6,17:PRINT"SCORE":SZ
4260REPEATUNTILGET=32:PROC:XZ=9:YZ=14:
PROCPRINT:GOTO30
4270ENDPROC
4280DEFFPROCSDO:IFHJZ=0:ALZ=14:HJZ=1:ENW
ELOPE1,0,9,99,26,31,10,5,62,1,-2,-2,127,

```

```

0:SOUND1,1,1,1
4290VDU4:VDU31,ALZ-2,SKZ:COLOUR1:VDU166
:IFALX(14:VDU31,ALZ,SKZ:COLOUR128:VDU32
4300ALZ=ALZ-2:IFALX(7:HJZ=0:VDU31,ALZ,S
KZ:COLOUR1:VDU206:FORT=0 TO 60:NEXTT:VD
U31,ALZ,SKZ:COLOUR128:VDU32:SOUND0,-15,1
10,2
4310IFXZ-ALZ<2ANDXZ-ALZ>-1:IFYZ=SKZORYZ
=SKZ+1PROCDEAD
4320IFDX=0:FORT=0 TO 100:NEXTT
4330ENDPROC
4340DEFFPROCDEAD:FORT=0 TO 7:VDU19,T,0,0,0
,0:NEXTT:VDU4:CL6:COLOUR128:ENDPROC
4350DEFFPROCDEAD:VDU20:VDU19,0,3,0,0,0:VDU
19,2,2,0,0,0:VDU19,7,4,0,0,0:ENDPROC
4360DEFFPROCANT:IFBEZ=0:HIZ=YZ-1:GZ=0:BE
Z=1
4370IFDX=0:FORT=0 TO 130:NEXTT
4380VDU4:IFBX(0:VDU31,6X,HIZ:COLOUR128:
VDU32:VDU31,6X,HIZ+1:VDU32
4400A=RD(10):IFA<6:IFHIZ-(YZ-1)>VDU31,
6X,HIZ+1:VDU32:VDU32:VDU32:HIZ+HIZ-1
4410IFA<6:IFHIZ-(YZ-1)>VDU31,6X,HIZ:VD
U32:VDU32:VDU32:HIZ+HIZ+1
4420IFWIZ=0:VDU31,6Z+1,HIZ:COLOUR1:VDU1
87:VDU188:VDU31,6Z+1,HIZ+1:VDU186:VDU189
:WIZ=1:GOTO4440
4430IFWIZ=1:VDU31,6Z+1,HIZ:COLOUR1:VDU1
91:VDU194:VDU31,6Z+1,HIZ+1:VDU190:VDU195
:WIZ=0
4440GZ=6Z+1:IFBZ(16:VDU31,6Z,HIZ:VDU32:
VDU32:VDU31,6X,HIZ+1:VDU32:VDU32:BEZ=0
4450IFXZ-6Z<-2ANDXZ-6Z<-2:IFHIZ-YZ<-3AND
HIZ-YZ<-1:PROCDEAD
4460ENDPROC
4470DEFFPROCDOH:VDU4:COLOUR7:FORT=7 TO
12:VDU31,T,Q:VDU211:NEXTT:ENDPROC
4480DEFFPROCDOV:VDU4:COLOUR7:FORT=Q TO
Q+5:VDU31,P,T:VDU211:NEXTT:ENDPROC
4490DEFFPROCTING:ENVELOPE2,1,-42,-1,1,1,1,
1,2,-4,3,-3,-4,103,126:SOUND2,-15,10,E
NDPROC
4500DEFFPROCDOVC:VDU4:COLOUR128:FORT=7 T
O 12:VDU31,T,Q:VDU32:NEXTT:SZ=SZ+50:END
PROC
4510DEFFPROCGL:GCOL3,1:FORT=0 TO 5:MOVED
Z,PZ:DRAWZ+500,PZ:FORTH=0 TO 60:NEXTH:E
NVELOPE3,0,0,86,-17,0,2,9,94,-1,-65,-1,1
00,0:SOUND3,3,10,3:MOVEDZ,PZ:DRAWZ+500,
PZ:FORTH=0 TO 160:NEXTH:NEXTT
4520PROCDEAD
4530DEFFPROCFC:VDU4:VDU31,XZ,YZ-1:COLOUR1
28:VDU32:VDU32:VDU31,XZ,YZ:VDU32:VDU32:F
ORT=0 TO 5:PROCTING:NEXTT:COLOUR1:VDU31
,2,10:PRINT"CONGRATULATIONS!":VDU31,2,12
:PRINT"YOU HAVE ESCAPED":FORT=0 TO 5000
:NEXTT:#FX15,0
4540VDU31,6,14:PRINT"SCORE":*SZ
4550REPEATUNTILGET=32:GOTO20
4560ENDPROC

```

Screen Reverse

Alan Crawford

It is often handy to be able to produce a mirror image of a screen. If you produce a reversed screen, it can be dumped to a printer and, if you have the right equipment, made into a T-shirt transfer.

Basic routines to do this are very slow, but this short machine language routine is

very quick and will reverse a mode 8 hi-res screen in less than half a second.

The routine is contained in REV\$ and is called using DUMMY=USR(ADR(REV\$)). It uses all of page 6 (1536-1791) as a workspace, so don't store any important data there.

```
10 REM SCREEN REVERSER
20 REM BY ALAN CRAWFORD
30 DUMMY=USR(ADR(REV$))
40 DIM REV$(74)
50 FOR L=1 TO 74:READ D:REV$(L,L)=CHR$(D):NEXT L
60 STOP
70 DATA 104,240,7,170,104,104,202,208,251,96,162,0,160,8,
138,74
80 DATA 62,0,6,136,208,249,232,208,243,165,88,133,203,165,
89,133
90 DATA 204,160,192,152,72,160,39,177,203,170,189,0,6,72,
136,16
100 DATA 246,160,39,104,145,203,136,16,250,104,168,165,203,
24,105,40
110 DATA 133,203,144,2,230,204,136,208,218,96
```

Break Disable

Alan Crawford

Once this program has been called with DUMMY=USR(1536), where DUMMY is a dummy variable, it will disable the break key completely. The normal method of doing this involves turning off the Break key interrupt by changing a bit in the register of the Pokey chip that is responsible for generating IRQs. This has the disadvantage

that pressing Reset or changing the graphics mode re-enables the Break key.

This program, however, works by re-vectoring the interrupt to a new 'dummy' routine that does nothing whatsoever. It also traps the Reset key to prevent this from re-enabling Break.

```
10 REM BREAK KEY DISABLE
20 REM BY ALAN CRAWFORD
30 FOR L=1536 TO 1574:READ D:POKE L,D:NEXT L
40 DUMMY=USR(1536)
50 STOP
60 DATA 104,208,29,120,169,30,141,54,2,169,6,141,55,2,169,3
70 DATA 133,2,169,6,133,3,165,9,9,2,133,9,88,96,104,64
80 DATA 170,104,104,202,208,251,96
```

Case Lock

Alan Crawford

The most irritating feature of the Atari's keyboard is the close proximity of the Caps and Inverse keys to Return. It is very easy to hit the wrong key and when you couple this with Atari Basic's refusal to accept inverse

or lower case input, this is a problem.

This short routine locks the Atari in normal video and upper case. It installs itself securely so that it is not disabled by pressing Reset.

```
10 REM CASE LOCK
20 REM BY ALAN CRAWFORD
30 FOR L=1536 TO 1584:READ D:POKE L,D:NEXT L
40 DUMMY=USR(1536)
50 STOP
60 DATA 104,208,39,169,3,133,2,169,6,133,3,165,9,9,2,133
70 DATA 9,169,6,160,27,162,6,32,32,228,96,72,169,0,141,182
80 DATA 2,169,64,141,190,2,104,76,95,228,170,104,104,202,208,
251,96
```

SWEET SIXTEEN

Mark Jenkins with new music software for the Commodore 64.

A few weeks back we gave a run-down of the new Commodore 64/128 music products from Sonus, an American company which has just set up its UK office. Sonus also market products for the Atari ST, Apple Macintosh and IBM PC compatibles, but we'll be reviewing the Commodore products first.

Included in the range are:

MIDiTech (£60), a System Exclusive librarian which can record data dumps from many synths and drum machines;

Sonic Editor (£60), a graphic editing package for the Ensoniq Mirage or Prophet 2000 samplers;

GlassTracks (£47), a basic eight-track, eight-sequence polyphonic MIDI sequencer;

RX Librarian (£30), a data dump recorder for the RX11, RX21 and RX21L drum machines;

Super Sequencer 64 (£39), a professional-level sequencer with System Exclusive data recording abilities;

MIDI Processor (£60), an Event Editor for the Super Sequencer package;

Double Banked Librarian/Programmer (£60), a Yamaha DX7/TX7 synth editor which can cope with both these units simultaneously;

Score Track (£100), a composer package with a full musical display written by Gerhard Lengeling, author of the C-Lab range.

This week we'll look at *GlassTracks* sequencer. Whether this has anything in common with composer Philip Glass is anyone's guess. Maybe it makes all your compositions sound like his, but there's no obvious reason why this should be the case.

In fact the package, which consists of a single disc and handbook, is pretty easy to use, and operates with almost any C64 MIDI interface (Datel, SIEL, Jellinghaus, Steinberg and others have models available). The initial screen allows you to set Pulse Per Quarter Note (PPQN) rates for synchronisation purposes (24, 48 or 96 PPQN), and this will mainly relate to the use of non-MIDI drum machines with the package. Pressing Return takes you to the Sequence screen, which features a Main Menu at the bottom of the screen offering Edit Sequence, Edit Track, Song and Disc options.

These options are selected using the Function keys and choosing Edit Seq will give you a further menu with Append, Name, Transpose and Exit options. Exit

takes you back to the main menu, while holding Control or Shift offers you alternative lists of options – such as Set Clock, Int Drum, Int Click and so on. Generally, *GlassTracks*' screens all work in this way, offering four menu options visibly and several more when the Shift or Control keys are pressed. It's a handy way of offering the maximum number of accessible options without cluttering the screen too much.

To record a sequence, just use the sequence cursor (operated by the arrow keys) to choose a sequence number, then hit "/" and the Space bar to start up the

section you've recorded – for instance, 005:01:01 if you've just recorded a four-bar pattern.

Chaining many of these patterns into a song involves (not surprisingly) going into Song mode. Each of the eight sequences you can store can have its own tempo programmed, so the resulting song can have tempo changes throughout its course if desired.

Before composing a song you can edit your individual sequences, append them to themselves or to each other, overdub or punch in, and auto-correct performances down to a 1/32nd note triplet. You can also shift tracks to make up for delay problems, remove pitch bend and other unwanted data to save memory, and so on.

The Song mode allows you to chain up to sixteen sequences, simply by typing the sequence numbers into a list appearing at the top of the screen. In fact this may be a little limiting if you want to compose very long or complex pieces – but for a conventional verse/chorus/verse/chorus/middle-eight/verse/chorus structure, it's fine.

You can name songs and save them to disc, as well as inserting new sequences into the middle of a song at any time; you can transpose a whole song and get a directory of songs on the disc.

It's also possible to record in step time by using the S key – you can also play back one step at a time too, to check for errors – and to punch in while the track is running using Live Punch (the "P" key).

There are many other hidden commands, largely dealing with MIDI problem-solving, but these are well-catalogued in a comprehensive and clearly written handbook. In fact, *GlassTracks* is very quick and easy to get into, and all the functions you need for composing – such as being able to mute some tracks while you're working on others, or Solo a single track – are provided. However the main limitation of the system is the sixteen-sequence capacity of a song, which really isn't enough for more ambitious music. There are ways around this which involve composing very long and complex sequences in the first place, but a package such as C-Lab *SuperTrack*, or Steinberg *Pro-16* (both of which are, admittedly, much more expensive than *GlassTracks* will reward you with more sheer compositional power. However, at the price, *GlassTracks* gets a definite thumbs-up.

Sonus UK, PO Box 18, Wokingham, Berks RG11 4BP, 0734 792699.



Record metronome, which is audible through the monitor. In the centre of the screen is a counter which tells you how many bars you've recorded, while next to it is a 'tape transport' display which simulates the layout of a multitrack tape recorder – as on many Atari ST sequencing packages.

In fact, within the limitations of the C64's display, *GlassTracks* is trying very hard to be an ST sequencing package. Track number, name, velocity values and MIDI channel are all displayed constantly, so as long as eight tracks is enough for your compositions, you're not likely to go short of information during the recording process.

Measure number, beat number and number of pulses are all displayed on both the main and 'End' counters, the latter showing you the value of the next beat after the

LONDON CALLING

Since its inception in 1983, Micronet 800 on Prestel has become more interactive than ever. Here, Steve Gold looks at Micronet past, present and future . . .

When Prestel first appeared on the then-fledgling UK communications scene back in the late 1970s, it was seen by many as nothing more than a paged set of information frames, accessed and controlled by a numeric keypad over telephone lines.

While the then Post Office had great hopes for what was a technically advanced system at that time, Prestel viewdata never really took off. By the time 1983 came around, most people had almost written the service off as a failed great white hope of British Telecom.

As with all general marketplace products however, Prestel was really a solution waiting to become an answer to a technical question. BT's Martlesham Heath laboratories have always come up with technically innovative ideas before their time and Prestel was just such an idea.

Micronet is born

In March of 1983, East Midlands Allied Press came up with the innovative idea of publishing a computer magazine on Prestel. That service was Micronet 800 – the '800' part of the name stems from its original sitting on the Prestel database, from page 800 onwards.

Since the heady days of '83, when a small band of dedicated staff worked all hours to bring a constantly changing electronic magazine to their subscribers, Micronet has grown to where it is today – a major force on Prestel with more than 23,000 subscribers.

Subscribing to Micronet

Subscribing to Micronet has a relatively painless effect on the wallet. For the sum of

£66 a year – payable quarterly in arrears – you have access to Prestel and Micronet, usually on a local call basis throughout much of the UK. The Prestel database boasts more than 250,000 screens – frames – of data. 30,000 of these frames are under the direct control of Micronet, whose 28-strong London-based staff edit the database on a seven-day a week basis.

Aiding the 28 full-time staffers on Micronet are several dozen home-workers who, for varying remuneration, edit specialised databases under the Micronet umbrella database.

What it costs

I've said that Micronet costs £66 a year plus local call telephone expenditure. In practice, providing cheap rate periods are adhered to, the call expenditure works out at a shade over 50 pence an hour – very cheap when compared to other forms of entertainment.

In addition to the subscription, a typical computer user must also buy – or have access to – a computer modem plus suitable viewdata software. Prices start at about the £25 mark for a low-cost model, which Micronet will actually give you free of charge – plus suitable software – providing you contract and pay for a year's subscription in one go.

As with many services, some facilities on Micronet 800 are what are known as value-added options. By means of a frame charge, which can be anything from 1 to 99 pence (usually at the lower end of the price range), subscribers can access value-added areas. These areas include chargeable telesoftware and similar facilities.

Telesoftware, as the name implies, is an area which allows suitable computer soft-

ware to be encoded and passed over the telephone line for subsequent saving to disc or tape locally. The program(s) are then loaded and run when the user is offline.

Because Micronet cuts out the middle men in the computer software business, it's able to offer substantial discounts on – and a large quantity of free – telesoftware for download on a variety of machines. The free software is often compared to that which is listed free of charge in several computer magazines. In fact, since a proportion of the subscription to Micronet is spent on commissioning such software, the standard of the freebie programs is surprisingly high.

Some programs, of course, are unsuitable for download and so Micronet also features a software mail order section called *Soft Shop*. Like its telesoftware counterpart, *Soft Shop* supplies software for a variety of home micros at a discount.

News and Views

Because the computer industry is alive on a seven days a week basis, Micronet can supply its subscribers with a diet of computer bums on seven days a week.

Each day, the news editorial team upload a series of informative news stories to the database and, come the 6pm cheap rate periods during the week – and after 1pm on Saturday and all day Sunday – subscribers log on to glean all that's new in the computer industry.

Micronet's news editor Ian Burley prides himself on being first with the news – often a clear week or more ahead of his printed competition (*PCW* included!). Most computer shows are attended by Burley and his staff, and a story on the show's events is usually online before the show has shut its doors to first day crowds.

Free Your Micro with the MicroStuffer

64K Printer Buffer



Works with any standard Centronics parallel interface printer ★ Complete with cable and power supply ★ Clear button ★ Multiple copy repeat function ★ Self-test ★ Comprehensive twelve month guarantee

Only £49.95
INCLUDING VAT
AND DELIVERY

Frontier Software

PO BOX 113, HARROGATE
NORTH YORKSHIRE HG2 0BE
TEL: 0423 67140

10-DAY MONEY
BACK GUARANTEE

SPEEDYSOFT

The Fastest Mail Order Service Available

Some very Special Introductory
Offers for new members

Order up to a maximum of 5 titles for only £1 each

Spectrum

River Rescue
Alien Highway
Stage Coach
Tower of Evil
Attack of the Killer
Tomatoes
Grumpy Grumpy
Superleuth
Automania
Orc Attack
Deba Wing
Brass Buff 3D
Backpacker's Guide to the
Universe
+ 80 VAT Manager
Tapper
Blockade Runner
Special Delivery
Kidnap
Chopper
St. Crippens
Desert Burner
Snodgits
Chiller
Space Walk
Apollo 2
Formula 1 Simulator
Jason's Gem
Journey's End
Holy Grail
Sindbad and the Golden Ship
Rockman
Soul of a Robot
Space Hunter
Inc. Shrinking Freeman
Ticket to Ride
Sky Ranger
ZZZZZ
Lap of the Gods
Octagon Squad
Kane
Universal Hero
Pipgo
Hyper Bowl
Future Games
Master Chess
Milk Race
Video Poker
Bump, Set, Spike
Colony
Invasion
Jackie & Wicle
Gallitron
Wolfan

Commodore 64

P.O. Fuzz
Master of the Lamp
Commando
Special Delivery
Wing Commander
Snodgits
Everyone's a Wally
Java Jim
Beach Head
Orc Attack
Seaside Special
Zaxxon
F.A. Cup Football
Frantic Freddie
Jim Genie
Countdown to Meltdown
River Rescue
Eureka
Caesar the Cat
Herberts Dummy Run
Confusion
Grogs Revenge
1985
One Man & His Droid
ZZZZZ
Nonteraqueous
BMX Trials
Space Hunter
Chiller
Se Ka of Assiah
Vegas Jackpot
BMX Racer
Challenger
Holy Grail
Zonal Patrol
Percy
PSI Warrior
Go for Gold
Redhawk
Back to the Future

Amstrad

Meltdown
Alien
Beach Head
Defend or Die
World Cup '86
Yie Ar Kung Fu
Sweevo's World
Exploding Fist
Fantastic Voyage
Superchess
Equinox
Boulder
Sky Fox
Confusion
Technical Ted
Air Traffic Control
Artwork
Frank Bruno Boxing
The Magic Sword
Electro Freddie
Split
Jet Boot Jack
Roland Goes Digging
Finders Keepers
Chiller
Nonteraqueous
Locomotion
Soul of a Robot
One Man and His Droid
Caves of Doom
Kane
Radzone
Molecule Man
Video Poker
Feud
Colony
Jackie & Wicle
Gallitron
Xcel
Kenilla
Kobayashi Nuru
Curse of Sherwood
Rasternac
Chronos

- ★ Orders despatched within 48 hours.
- ★ We accept Access, Visa, Mastercard and Eurocard.
- ★ Orders accepted by telephone between 9.30am to 7.30pm – Monday to Saturday. Just telephone: 056 45 575.
- ★ Free membership if you order any of the above titles.
- ★ Overseas orders are welcome.
- ★ We cater for Commodore 64, Spectrum, Amstrad CPC and PCW, Electron and MSX.
- ★ Members receive catalogues regularly.

To order just fill in below. Please print clearly and do not forget to enclose either cheque or postal order made payable to **Speedysoft**, 15 Lady Byron Lane, Knowle, Solihull, West Midlands B93 9AT or fill in credit card details.

Name	Comp Type
Address	
VISA/Access/Mastercard/Eurocard	
Card No. <input type="text"/>	Price
Title	
1.	
2.	
3.	
4.	
5.	
Post & Packing	
Grand Total	
Please remember only up to a maximum of 5 titles	

FREE



large
(100-disk capacity)
including disk storage
box worth £13.95

– When you buy **25 disks for only £18.75**
including postage and VAT!
Alternatively, buy 50 disks for £28.95 and get the box free!
All disks are Japanese Fuji DS/DD disks 5.25".
They come with user sets and are certified to 960ps.



Nobles, FREEPOST, Kirted Park
Industrial Estate, Crowthorne, Co. Aylesbury,
Berkshire, Tel: (0494) 51838

7 Day Delivery. One year guarantee
& 14 day money back period

We accept orders from all government bodies, schools, universities, PLC's etc.
We dispatch on receipt of an official purchase order.

ORDER BY
PHONE FOR
SAME DAY
DISPATCH



Line Noise

One area which has recently opened up on Micronet is *Line Noise* - named after the glitches and whirrs that wreak havoc with a computer modem user's data. Run by Micronet's effervescent deputy editor Chris Bourne, the area opens up for business at 7pm each weekday night, and goes on until the wee small hours.

And what business! Chris created and runs the *Line Noise* area, which is really an interactive CB-style chatline for subscribers to chat to each other - and to Chris - over the network. Thanks to some nifty Micronet software, Chris is able to insert his own comments onto the frames of 'chat' created by subscribers. If some highly contentious and thought-provoking discussions occur each night that *Line Noise* is open.

Interlink

Interlink is another recent innovation on Micronet. By use of a Prestel gateway, subscribers can access the Telecom Gold electronic mail network via a viewdata format gateway on Micronet.

A mailbox on Telecom Gold can cost upwards of £40 to sign up to, along with recurrent costs of £5 a month for rental of the mailbox. Thanks to a deal struck between Micronet and Telecom Gold, Micronet subscribers can obtain a mailbox on Telecom Gold - accessible via the *Interlink* gateway - free of all sign-up and recurrent standing charges. Users then pay for the use of their Telecom Gold mailbox on a pay-as-you-go basis.

The free Telecom Gold/*Interlink* mailbox facility is worth £60 a year (pro rata to £5 a month) to Micronet subscribers. Whichever way you look at it, this offer represents good value for money.

Teleconferencing

While Micronet already has its chatline services, which allow subscribers to talk publicly to each other, the service does not yet support 'private' or 'closed group' discussions.

In recognition of this fact, the system will shortly open a gateway into another computer capable of supporting teleconferencing. This facility will work to both viewdata and 80-column scrolling formats (see below) and on a pay-as-you-go basis.

Charges for teleconferencing have yet to be decided, but Micronet say that the charges to subscribers will be modest, and cover the cost of switching calls from the relevant Prestel centre to the Micronet teleconferencing computer.

Because teleconferencing calls will be processed through a non-Prestel computer - a Dec PDP-11 in fact - the facilities available will be wide-ranging, supporting several features never before seen on any online system. These include:

- Subscriber keys - Using a 'key', a nominated teleconference administrator (any subscriber can create a key conference) can admit subscribers to the teleconference of his/her choosing.

Free Prestel Demonstration

If you have access to a computer, modem and suitable viewdata software, you can access the Prestel demonstration database by following this simple procedure:

1. Dial the following number for your area (omitting the initial trunk code where appropriate):
 London & South East: 01-618 1111
 Birmingham & Midlands: 021-618 1111
 Scotland - Edinburgh: 031-618 1111
 Scotland - Glasgow: 041-618 1111
 Liverpool & North West: 051-618 1111
 Manchester & North West: 061-618 1111
 (When in doubt use the London 01-618 1111 code)

2. Once carrier is heard, place your modem online (refer to modem instructions if appropriate).

3. Use a logon ID of ten 4s (4444444444) and a password of four 4s (4444) and follow the on-screen instructions.

- Teleconferencing blinds - Using a 'blind', teleconferencing delegates can remove any sign of a current teleconference from the public system. This facility prevents anyone peeking in and seeing who's attending the teleconference. It also prevents unauthorised and/or unnecessary interruptions to a teleconference.

Dave Rosenbaum, Micronet's publicity officer is enthusiastic about the teleconferencing system:

"This is a highly innovative product that will allow subscribers a low-cost method of communicating with each other in private groups," he said.

"Private teleconferencing is in its infancy on even the latest US databases, so it's good that subscribers can take advantage of the latest technology on Micronet," he added.

80-column scrolling

One of the major criticisms of Prestel has always been the limitations imposed by the standard viewdata format - 40 columns by 22 lines, two of which are used for control information.

Now, thanks to some innovative programming work by Micronet's technical department - headed by technical director Mike Brown - subscribers will be able to flip through a gateway on Micronet and into other services on a data-transparent basis. This effectively means that the Micronet/Prestel computers will behave like PSS and allow all data to flow unimpeded from the subscriber's terminal to the gateway computer (and vice versa).

Used in conjunction with the existing Interlink service and the forthcoming teleconferencing service, the 80-column scrolling facility will allow subscribers to have the best of both worlds - using viewdata format or 80-column scrolling format as appropriate.

Vasscom

Like several of the long-standing online databases, Prestel's speed seems a little pedestrian compared to the higher-speed databases coming online in the commercial market. For this reason Prestel and Micronet are working towards the national implementation of Vasscom.

Vasscom will allow users of most multi-speed modems to log on to the service at speeds as high as 2400 baud full duplex, as well as the existing 1200/75 baud speeds. Speeds supported range from a lowly 300 baud, through 1200/75, 1200/1200 and the 2400/2400 baud rate.

At the time of writing, Vasscom is available in the London, Manchester and Reading areas, as well as certain parts of Scotland. National access via the multi-speed Vasscom network is expected to be available by early next year.

For further information

Further information on all of Micronet's activities is available from: Micronet 800, Durrant House, 8 Herbal Hill, London EC1R. Tel: 01-278 3143.

VIP PROFESSIONAL

THE POWER OF LOTUS 1-2-3™ ON THE ATARI ST



'LOTUS PLUS GEM'

Probably the most impressive program to have been released so far for the Atari ST range, VIP Professional is an extremely easy to use, integrated spreadsheet, database and graphics program which is identical both in features and commands to Lotus 1-2-3™. To give you the best program possible on your Atari ST, VIP Professional integrates the three essential applications of Lotus 1-2-3™ with the smart face of GEM. The same spreadsheet analysis, information management and extraordinary business graphics are all combined in one easy to learn, affordable package. What's more, VIP Professional not only has all the features of 1-2-3™, you can also type the same commands to do the same things. Or, better still, you can use a mouse to make it even simpler! VIP requires only one disk drive to operate and also works with a hard disk drive. It is compatible with both monochrome and colour systems. Probably the most surprising feature of VIP Professional is not its total compatibility with Lotus 1-2-3™, nor its ease of use with the GEM environment, but its price. Lotus 1-2-3™ for the IBM PC AT costs £395 (+VAT=£454.25), whereas VIP Professional for the Atari ST range of computers is a mere £199 (-VAT=£228.85). That's nearly HALF PRICE!

INTEGRATED
**SPREADSHEET
DATABASE
GRAPHICS**

WITH
LOTUS 1-2-3
COMPATIBILITY

£199
(+VAT=£228.85)

1 SPREADSHEET

VIP Professional was modelled after the powerful, best selling Lotus 1-2-3™ program. It has every feature, every command of that program. In fact, the experienced 1-2-3™ user will feel right at home using the same keystrokes. But this version is made even easier to use by adding the user friendly face of GEM, so the beginner can use it right away. If you want to do your home budgets, financial planning, or sophisticated business inventory control or budget modelling, VIP Professional will fit the bill. And you can freely use 1-2-3™ or VIP Professional files created on other computers in VIP Professional on your Atari ST. And Professional is not only flexible, it's powerful too, with a full 8,192 row by 256 column worksheet to use with up to a massive 4Mb of memory. (Note: Lotus 1-2-3™ has only 2,048 rows).

2 DATABASE

VIP Professional includes a powerful data manager to arrange, store and analyse your important information. It can be used to store your home or business records and do extensive searches, sorts and comparisons. It allows up to 8192 records, with up to 256 fields and queries and 256 search criteria. The database manager can be used in conjunction with the spreadsheet commands to add greater power to the database facilities including sorting specific ranges of the database. You can also specify how you sort files, from the highest value to the lowest value (or from the lowest to the highest), or alphabetically (forwards or backwards). The graphics part of VIP Professional can be used to show trends in the database or other information. With its powerful statistical functions, it has almost limitless power.

3 GRAPHICS

VIP gives shape to your figures by letting you graph your data into six different types of graphs, in starting colour or black and white. Pie charts, bar graphs, stacked bar graphs, line graphs, scatter graphs and X-Y graphs. You can colour your spreadsheet or database data to give instant professional presentations. Your graphs will change instantly as you change the data. When creating a graph you may specify a main heading, a sub heading and a third title at the base of the graph. The necessary scale can be defined either by the user or automatically created. In pie graphs, the most important section of the pie can be separated from the other sections to draw attention to its importance. You may save graphs individually on disk for use at a later date. You can also print your graph on any Epson compatible dot matrix printer.

- VIP Professional has 'Instant help' so you can find more information instantly.
- VIP calculates to a full 302 digits against Lotus 1-2-3™ which only calculates to 100.
- VIP allows for 256 Query Fields against only 32 allowed by Lotus 1-2-3™.
- VIP has a complete GEM interface, for ease of use, unlike the text of Lotus 1-2-3™.
- VIP allows different fonts and has an on/off grid. Not found in Lotus 1-2-3™.
- VIP supports greater memory and larger spreadsheets than Lotus 1-2-3™.
- VIP graphs and worksheet can be viewed together. Pie charts can be exploded.
- VIP can accept any .WK3 files from Lotus 1-2-3™ without modification.
- VIP displays all spreadsheet information in user-scalable GEM windows.
- VIP can be manipulated using either the keyboard or the user friendly mouse.
- VIP is currently available for the AMIGA, ST and APPLE IIe and IIGS.

OFFICIAL UK VERSION

The official UK version of VIP Professional has a pound (£) sign as a standard part of its character set. Other versions have also been imported unofficially from the USA and have a dollar (\$) sign instead of a £ sign. These versions will not be supported by the UK distributors or their dealers. Ensure that the VIP you buy is the official UK version, not an unofficial import with incorrect characters.

INFORMATION REQUEST FORM

To: Silica Shop Ltd, UPDAT 0887, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX
Please send me further details of VIP Professional for the ST

Mr/Mrs/Ms: _____ Initials: _____ Surname: _____

Address: _____

Postcode: _____

I am interested in the Atari ST
I already own an Atari ST



VIP Professional is available from Atari ST Dealers throughout the UK, if your local dealer does not have VIP in stock, it can be obtained by mail order (P&P free) from:

SILICA SHOP Ltd, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX
Tel: 01-309 1111

All computations made to Lotus 1-2-3™ are to version 1A.

ESCE

Put aside a month for this beautiful pig

The Archimedes is the most powerful desktop computer in the world. With four times the processing power of a £7,000 IBM based on the 80386, or around 20 times the processing power of the speedy Beeb B, it should be an

from invading aliens. As you fly over the 3D landscape, houses and trees rush by with a realism not seen on anything less than an Evans and Sutherland flight simulator. Your craft casts a shadow over the land and sea, and anything else which flies



seas without a care. It only takes about a month's solid practice. If you try to thrust out of the atmosphere the engines stop working until you have fallen back to a sensible height.

The foe comes in two flavours, blue and red. The blue baddies look like the roof of a fairground carousel. They land and infect the planet, a red plague spreading over the surface. Occasionally they will take off and fly to another place but they will not fire at you. The red foe is a fast, armed ship much like your own. Points are scored

to the land, you'll destroy too many trees and lose a lot of points. Ideally you will get a red and blue ship together at sea.

Once you have destroyed a quota of ships, three blues and a red on the first level, you get a bonus for finishing based on the area of the planet which is not yet infected.

Zarch is difficult. Mastering the control is a pig. But the game is so beautiful that you won't give up, and it is absurdly addictive. Each time you play you get better until it doesn't seem quite so difficult after all.



amazing games machine. What's that, gasps of horror? But big expensive machines are not just for running spreadsheets and word processors, particularly not machines which can display 256 colours and have stunning sound facilities.

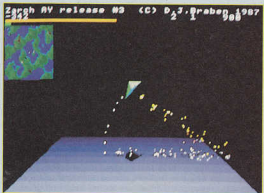
But to harness this power takes time (and being a programming genius helps). The man who had both was David "Elite" Brabern. Having proved himself by co-writing *Elite*, he also had full co-operation from Acorn. The first result of his efforts was *Lander*, the game bundled with the Archimedes. This grew into *Zarch* which is now available through Superior software.

You control a spaceship and have to defend the planet below

casts its own shadow, be it an enemy ship, one of your bullets or exhaust from your engine.

Propulsion is by means of a single downwards pointing jet. Press thrust and you climb vertically. To move forward you must tilt the nose as you would with a helicopter. This requires delicate manipulation of the mouse - tip too far and you find that although you are going forward speedily you also lose height and become an ex-spaceship. You can also tip the craft sideways and backwards, moving with complete freedom. Mastering the flying controls is the key to the game - it's a lot like *Thrust* in 3D.

Once you have the mouse tamed you can dive and roll, stop on a sixpence and skim



for shooting the aliens and deducted for decimating trees and buildings or for wasting shots. So a score of -101 is not impossible. You need to be very accurate if you want to shoot a blue ship when it is sitting between houses, but then the virus has got to be stopped.

You have a couple of smart bombs at your disposal, an easy way to destroy the red ship, but not ideal for use close

Zarch stays exciting however good you get. I expect every Archimedes owner will buy it. Both of them.

Ian Rook

Program Zarch **Type** Arcade **Price** £19.95 **Supplier** Superior Software Regent House, Skinner Lane, Leeds LS7 1AX.

NEW RELEASES

Your complete guide to all the software released this week

Amstrad CPCs

Program Sabrewulf Type Arcade
Price £1.99 Supplier Ricochet,
8-10 Paul Street, London EC2A
4JH.

Program Knightlore Type Arcade
Price £1.99 Supplier Ricochet,
8-10 Paul Street, London EC2A
4JH.

Program Alien 8 Type Arcade
Price £1.99 Supplier Ricochet,
8-10 Paul Street, London EC2A
4JH.

Program Knightshade Type Arcade
Price £1.99 Supplier Ricochet,
8-10 Paul Street, London EC2A
4JH.

Program The Plot Type Arcade
Price £2.99 Supplier Firebird,
64-76 New Oxford Road, London
WC1A 1PS.

The review copy of this arrived a couple of weeks ago along with a 'non-disclosure agreement', threatening to have me beheaded if I reviewed it before now. However, this crusading journalist can now reveal that it was all part of an establishment plot, a conspiracy to hide the fact that the game isn't all that good until after the PCW show.

Based on the *Yes, Prime Minister* TV programme, the game casts you in the lead role of Jim Hacker, the not very able PM, assisted (or hindered) by his sidekicks Sir Humphrey Appleby and Bernard Woolley. The purpose of the game is to survive five days in the mad whirl of British politics, making the best decisions you can in order to secure your standing in the daily opinion polls.

You start each day in the PM's office - shown on the screen as a rather garish (on the Spectrum version) picture, a bright red room with a yellow desk. Scattered around are various objects, such as a diary, 'phone, intercom, and so on, which are used to relay messages to and from your office. Moving a cursor over each object allows you to use it and the picture then changes to show you the text of the message.

As messages arrive you will have to decide how to respond to them, making decisions by choosing options from the menus that come up on the screen. If you move the cursor to the door handle you can leave your office and visit various characters who may be able to give you advice.

The authors of the TV series are quoted on the inlay as saying how well the game captures the spirit of the series, but I have vague memories of the series being hilarious, whereas here the 'humour' is really just a series of cynical jabs at politicians and other figures in authority. I'm all in favour of bureaucrat-bashing, but the TV series did it with a degree of wit and intelligence that's lacking in the game.

The actual decision making process doesn't really make you feel involved in the game, since it merely consists of selecting a response from the choice given (sometimes limited to two possible responses). Like Mosaic's earlier *Adrian Mole* game, *Yes, PM* suffers from too much sitting back and watching the reams of text unfold, and not enough chance to really feel involved in the action. I don't understand why this multiple choice format was chosen when the conventional adventure format allows for greater complexity and, since you can enter your own commands, creates a greater sense of involvement.

The five 'days' in the game load separately, and they cram quite a lot into the whole week, but it all started to feel a bit monotonous after a while. To be honest, I'd rather watch a repeat of the series anytime. **Stephen Dean**

Program Yes, Prime Minister Type Adventure/strategy
Machine Spectrum, C64, BBC B, Amstrad CPC, PCW and PCs
Price £14.95 all cassette versions, £19.95 all disc versions (except £24.95 for PCW and PC discs) Supplier
Mosaic Publishing, Gorley Firs, South Gorley, Fordingbridge, Hants.

BBC B

Program Knightlore Type Arcade
Price £1.99 Supplier Ricochet,
8-10 Paul Street, London EC2A
4JH.

Program Alien 8 Type Arcade
Price £1.99 Supplier Ricochet,
8-10 Paul Street, London EC2A
4JH.

Program Knightshade Type Arcade
Price £1.99 Supplier Ricochet,
8-10 Paul Street, London EC2A
4JH.



Atari ST

Program Phantasie III Type Fantasy
Price £29.95 Supplier SS/JUS
Gold, Unit 2-3, Holliford Way, Hol-
ford, Birmingham B6 7AX.

The concluding chapter of the role-playing saga reaches a triumphant conclusion with the final confrontation with the dark lord Nidamedus.

Significant changes have been made since *Phantasie II*, all for the good. The main map graphics and monsters have been updated, all the clumsy and awkward smoothed out and the whole thing looks and plays better.



Combined with innovations like being hit and hitting, specific body locations and suffering amputations and breaks, and you have an excellent game.



Program Annals of Rome Type Strategy
Price £19.95 Supplier
PSS, 452 Stoney Stanton Road,
Coventry CV6 5DG.

At last, PSS finally release the ST version of the Roman empire game that engrossed this office at the beginning of the year. Written in C so substantially faster than the Spectrum version.

Commodore 64

Program Plasmatron Type Arcade
Price £9.95 (£14.95 on disc) Supplier
CRL, CRL House, 9 King's
Yard, Carpenter's Road, London
E15 2HD.

Program Microrhythm Type Utility
Price £2.99 Supplier Firebird,
64-76 New Oxford Road, London
WC1A 1PS.



Program Traxion Type Arcade
Price £9.95 (£14.95 on disc) Supplier
CRL, CRL House, 9 King's
Yard, Carpenter's Road, London
E15 2HD.

Program X15 Type Arcade
Price £9.99 (£14.99 on disc) Supplier
Activision, 23 Pond Street, London
NW3 2PN.

Program Blackwyche Type Arcade
Price £1.99 Supplier Ricochet,
8-10 Paul Street, London EC2A
4JH.

Program Outlaws Type Arcade
Price £1.99 Supplier Ricochet,
8-10 Paul Street, London EC2A
4JH.



Incentive Software have been keeping a pretty low profile since the release of Graphic Adventure Creator, but all of a sudden they've announced their new Freespace games system and released three new GAC adventures.

Or, they've released about half a dozen new adventures, since two of the tapes have a complete adventure on both sides, and one is a multi-part game.

The Spectrum release, *Karyssia, Queen of Diamonds*, is a fairly standard fantasy/adventure. Your quest is to travel north across a small group of islands, to the castle, Karyssia where you will kill her and end her evil reign over the islands. This is the multi-load game, divided into three parts, so it's quite an extensive adventure even if it's not all that original. The game boasts 'isometric' graphics, but this just seems to mean graphics drawn with straight lines as with most Spectrum adventure graphics.

Much of the problem-solving involves around magic amulets and the like, but there is a spell-casting element that makes a change from the usual 'KILL GUARD' monotony of a lot of adventures. Apart from that the game is an average fantasy romp, OK but not outstanding.

C64 owners are offered *Zodiac*, another standard collect-the-lost-objects effort. This time you have to collect the twelve signs of the Zodiac needed to defeat the evil wizard Ramus. Again, this is a fairly professional job but the ideas behind it are so familiar that it left me feeling uninspired, to say the least, and not particularly anxious to see what came next. The 'B' side of the tape is a second adventure called *The Search For The Secret of Life*.

Nova, for Amstrad CPCs, is the best of the bunch. Having done the old fantasy plots in the other games, *Nova* tackles the equally familiar outer space scenario. The earth has been invaded by Cyborgs and only you can deliver the vital circuit board needed to begin evacuation of the earth's population. Despite the old formula, *Nova* is written in a slightly lighter style that makes it more enjoyable to play than the others. The second game on the tape is a haunted house scenario that's quite good fun, although it probably won't present too much of a challenge.

Despite the claimed versatility of GAC, reviewing a clutch of GAC games together does reveal the limitations of using a utility since, as with Quilled games, all these look and feel quite similar. However, the format limitations aren't responsible for the over-used fantasy and sci-fi plots, and more originality could well have perked the games up a bit.

Stephen Dean

Program *Karyssia, Queen of Diamonds* Type Adventure Machine Spectrum.

Program *Zodiac/The Secret of Life* Type Adventure Machine C64.

Program *Nova/Haunted House* Type Adventure Machine Amstrad CPCs.

Price All games £7.95 **Supplier** Incentive, 2 Minerva House, Calleva Park, Aldermaston, Berks.

Program *Sunburst* Type Arcade **Price** £2.99 **Supplier** Rack-it, 8-10 Paul Street, London EC2A 4JH.

Program *On Court Tennis* Type Arcade **Price** £2.99 **Supplier** Firebird, 64-76 New Oxford Street, London WC1A 1PS.

Program *Pegasus Bridge* Type Wargame **Price** £12.95 (£17.95 on disc) **Supplier** PSS, 452 Stoney Stanton Road, Coventry.

Program *4-Action* Type Compilation **Price** £9.95 (£14.95 on disc) **Supplier** American Action, PO Box 13040, S200 44, Malmö, Sweden.

A compilation of four action combat games from a new Swedish outfit, Blood N'Guts is about the best of the four, followed by '43 (the sequel to the arcade game, '42), Soldier One and Captured are lesser known titles, but they're not bad value at less than £10 for the four of them.

Program *Maniac Mansion* Type Arcade/adventure **Price** £14.99 - disc only **Supplier** Activision, 23 Pond Street, London NW3 2PN.

Program *Dragonskull* Type Arcade **Price** £1.99 **Supplier** Ricochet, 8-10 Paul Street, London EC2A 4JH.

Spectrum

Program *Car Wars Tennis* Type Arcade **Price** £2.99 **Supplier** Firebird, 64-76 New Oxford Street, London WC1A 1PS.

Program *Sun Star* Type Arcade **Price** £8.95 **Supplier** CRL, CRL

House, 9 King's Yard, Carpenter's Road, London E15 2HD.

Program *Car Wars* Type Arcade **Price** £2.99 **Supplier** Firebird, 64-76 New Oxford Street, London WC1A 1PS.

Program *Knightlore* Type Arcade **Price** £1.99 **Supplier** Ricochet, 8-10 Paul Street, London EC2A 4JH.

Program *Alien 8* Type Arcade **Price** £1.99 **Supplier** Ricochet, 8-10 Paul Street, London EC2A 4JH.

Program *Knightshade* Type Arcade **Price** £1.99 **Supplier** Ricochet, 8-10 Paul Street, London EC2A 4JH.

Program *Pegasus Bridge* Type Wargame **Price** £12.95 (£17.95 on disc) **Supplier** PSS, 452 Stoney Stanton Road, Coventry.

Program *Action Reflex* Type Arcade **Price** £1.99 **Supplier** Ricochet, 8-10 Paul Street, London EC2A 4JH.

An old Mirrorsoft title, in which you can control a bouncing ball and attempt to guide it through a series of obstacle courses. It wasn't really outstanding enough to justify its original price, but is much more worthwhile at budget level.

Program *Dark Star* Type Arcade **Price** £2.99 **Supplier** Firebird, 64-76 New Oxford Street, London WC1A 1PS.

CHARTS

Top Twenty

- (-) Renegade
- (10) Joe Blade
- (-) Arcade Classics
- (20) ATV Simulator
- (2) BMX Simulator
- (18) Back To The Future
- (1) Run For Gold
- (40) Dizzy
- (3) Paperboy
- (16) International Karate
- (23) Uchi-Mata
- (9) Soccer Boss
- (11) World Class Leaderboard
- (5) Cricket International
- (7) Destructo
- (4) Super Robin Hood
- (26) Kik Start 2
- (6) Milk Race
- (13) Barbarian
- (30) Four Great Games

Imagine
Players
Firebird
Codemasters
Codemasters
Firebird
Alternative
Codemasters
Elite
Endurance
Alternative
Alternative
US Gold
Alternative
Buildg
Codemasters
Mastertronic
Mastertronic
Palace
Micro Value

All figures compiled by Gallup/Computer Trade Weekly

MICRO-FILE

SOFTWARE

Central Media shop now open at address below

CENTRAL MEDIA

SPECIAL OFFER THIS WEEK ONLY
TO COMMEMORATE THE P.C.W. SHOW

WE SELL
ATARI ST
HARDWARE
Ring for
details

520 STFM
£275
1040 - £475

3.5 INCH DISCS
10 UNBRANDED S/S D/D £9.50
10 UNBRANDED D/S D/D £10.00

5.25 INCH DISCS
10 DATATECH D/S D/D 96tpi £7.99
10 DATATECH D/S D/D 48tpi £6.50
10 TDK S/S D/D 48tpi £5.99
10 AMSOFT CF2 3" £24.00
All prices inc. VAT & P&P.

Central
Media were
inviting at
the
P.C.W. Show,
did you miss
their act?

TRADE ENQUIRIES WELCOME

ALL CHEQUES & PO's PAYABLE TO

CENTRAL MEDIA

101 SPRING BANK, HULL HU3 1BH

TEL: (0482) 26581

(308)

The UPGRADES

The specialist PCW magazine '8000 Plus' selected our Upgrades as
"BEST VALUE D-I-Y MEMORY UPGRADE"

"Instructions are clear and concise... easier than you think."
We supply tested, TOP QUALITY, fast (150ns) chips which are jig performed for
ease of insertion - NO BENDING REQUIRED - plus a spare 'practice' chip.

PCW 8256 256K Internal Memory Upgrade £19.95

Internal DS/DD 2nd Disc Drive £135

New, improved version, NOT old model

Memory Upgrade plus 2nd Disc Drive £152

128K Memory Upgrade to 640K, essential for many
recent application programs, or to create a RAM
Disc of 380K on single drive machines. **£19.95**

PC1512

Prices include VAT and P&P. Delivery is normally by return.

Send Cheques/PO/LA orders to:

SILICON CITY

Dept. PCW, Wheel Rose, Redruth, Cornwall TR16 5DR
Access/Visa orders: Telephone 0209 891141

(481)

DEE JAY SAVERS

TAKE A LOOK AT THESE PRICES !!!

ATARI	RRP	Our Price	AMSTRAD	RRP	CASE
Leader Board	24.95	21.00	Editorial 12.20	11.00	8.50
Unbranded Kasset	12.95	11.00	Unbranded	11.00	8.50
The Bazing	12.95	11.00	Kung Fu Master	12.50	8.50
World Games	24.95	21.00	Space Harrier	12.50	8.50
Karate Kid II	24.95	21.00	Yo Jo Kung Fu	11.00	7.50
Robot Soccer	24.95	21.00	Unbranded	12.50	8.50
Power	12.95	11.00	Zip Car	12.50	8.50
10 Disk	12.95	11.00	Unbranded	12.50	8.50
Link II	24.95	21.00	Crystal Castles	12.50	8.50
Star Trek	24.95	21.00	Unbranded	12.50	8.50
Rock Hairs Guide	24.95	21.00	Breakdown	12.50	8.50
Unbranded The Last	24.95	21.00	Unbranded	12.50	8.50
Unbranded	24.95	21.00	Unbranded	12.50	8.50

FAR MORE STOCK available for the Commodore 64, 16 and Amiga. Featuring Amstrad 5050, 5060, 5070, 5080, 5090, 5100, 5110, 5120, 5130, 5140, 5150, 5160, 5170, 5180, 5190, 5200, 5210, 5220, 5230, 5240, 5250, 5260, 5270, 5280, 5290, 5300, 5310, 5320, 5330, 5340, 5350, 5360, 5370, 5380, 5390, 5400, 5410, 5420, 5430, 5440, 5450, 5460, 5470, 5480, 5490, 5500, 5510, 5520, 5530, 5540, 5550, 5560, 5570, 5580, 5590, 5600, 5610, 5620, 5630, 5640, 5650, 5660, 5670, 5680, 5690, 5700, 5710, 5720, 5730, 5740, 5750, 5760, 5770, 5780, 5790, 5800, 5810, 5820, 5830, 5840, 5850, 5860, 5870, 5880, 5890, 5900, 5910, 5920, 5930, 5940, 5950, 5960, 5970, 5980, 5990, 6000, 6010, 6020, 6030, 6040, 6050, 6060, 6070, 6080, 6090, 6100, 6110, 6120, 6130, 6140, 6150, 6160, 6170, 6180, 6190, 6200, 6210, 6220, 6230, 6240, 6250, 6260, 6270, 6280, 6290, 6300, 6310, 6320, 6330, 6340, 6350, 6360, 6370, 6380, 6390, 6400, 6410, 6420, 6430, 6440, 6450, 6460, 6470, 6480, 6490, 6500, 6510, 6520, 6530, 6540, 6550, 6560, 6570, 6580, 6590, 6600, 6610, 6620, 6630, 6640, 6650, 6660, 6670, 6680, 6690, 6700, 6710, 6720, 6730, 6740, 6750, 6760, 6770, 6780, 6790, 6800, 6810, 6820, 6830, 6840, 6850, 6860, 6870, 6880, 6890, 6900, 6910, 6920, 6930, 6940, 6950, 6960, 6970, 6980, 6990, 7000, 7010, 7020, 7030, 7040, 7050, 7060, 7070, 7080, 7090, 7100, 7110, 7120, 7130, 7140, 7150, 7160, 7170, 7180, 7190, 7200, 7210, 7220, 7230, 7240, 7250, 7260, 7270, 7280, 7290, 7300, 7310, 7320, 7330, 7340, 7350, 7360, 7370, 7380, 7390, 7400, 7410, 7420, 7430, 7440, 7450, 7460, 7470, 7480, 7490, 7500, 7510, 7520, 7530, 7540, 7550, 7560, 7570, 7580, 7590, 7600, 7610, 7620, 7630, 7640, 7650, 7660, 7670, 7680, 7690, 7700, 7710, 7720, 7730, 7740, 7750, 7760, 7770, 7780, 7790, 7800, 7810, 7820, 7830, 7840, 7850, 7860, 7870, 7880, 7890, 7900, 7910, 7920, 7930, 7940, 7950, 7960, 7970, 7980, 7990, 8000, 8010, 8020, 8030, 8040, 8050, 8060, 8070, 8080, 8090, 8100, 8110, 8120, 8130, 8140, 8150, 8160, 8170, 8180, 8190, 8200, 8210, 8220, 8230, 8240, 8250, 8260, 8270, 8280, 8290, 8300, 8310, 8320, 8330, 8340, 8350, 8360, 8370, 8380, 8390, 8400, 8410, 8420, 8430, 8440, 8450, 8460, 8470, 8480, 8490, 8500, 8510, 8520, 8530, 8540, 8550, 8560, 8570, 8580, 8590, 8600, 8610, 8620, 8630, 8640, 8650, 8660, 8670, 8680, 8690, 8700, 8710, 8720, 8730, 8740, 8750, 8760, 8770, 8780, 8790, 8800, 8810, 8820, 8830, 8840, 8850, 8860, 8870, 8880, 8890, 8900, 8910, 8920, 8930, 8940, 8950, 8960, 8970, 8980, 8990, 9000, 9010, 9020, 9030, 9040, 9050, 9060, 9070, 9080, 9090, 9100, 9110, 9120, 9130, 9140, 9150, 9160, 9170, 9180, 9190, 9200, 9210, 9220, 9230, 9240, 9250, 9260, 9270, 9280, 9290, 9300, 9310, 9320, 9330, 9340, 9350, 9360, 9370, 9380, 9390, 9400, 9410, 9420, 9430, 9440, 9450, 9460, 9470, 9480, 9490, 9500, 9510, 9520, 9530, 9540, 9550, 9560, 9570, 9580, 9590, 9600, 9610, 9620, 9630, 9640, 9650, 9660, 9670, 9680, 9690, 9700, 9710, 9720, 9730, 9740, 9750, 9760, 9770, 9780, 9790, 9800, 9810, 9820, 9830, 9840, 9850, 9860, 9870, 9880, 9890, 9900, 9910, 9920, 9930, 9940, 9950, 9960, 9970, 9980, 9990, 10000.

Send S.A.E. stating which computer you require info on and please make it a large envelope!

COMMODORE 64	RRP	CASE
Leader Board	24.95	21.00
Unbranded Kasset	12.95	11.00
The Bazing	12.95	11.00
World Games	24.95	21.00
Karate Kid II	24.95	21.00
Robot Soccer	24.95	21.00
Power	12.95	11.00
10 Disk	12.95	11.00
Link II	24.95	21.00
Star Trek	24.95	21.00
Rock Hairs Guide	24.95	21.00
Unbranded The Last	24.95	21.00
Unbranded	24.95	21.00

SPECTRUM	RRP	CASE
Editorial 12.20	11.00	8.50
Unbranded	11.00	8.50
Kung Fu Master	12.50	8.50
Space Harrier	12.50	8.50
Yo Jo Kung Fu	11.00	7.50
Unbranded	12.50	8.50
Zip Car	12.50	8.50
Unbranded	12.50	8.50
Crystal Castles	12.50	8.50
Unbranded	12.50	8.50
Breakdown	12.50	8.50
Unbranded	12.50	8.50
Unbranded	12.50	8.50

Please realise we have so much stock we can advertise a fraction of it!!!

BUDGET GAMES	SPEC.	C64	C16	ATARI	AMS	BBC
Rock Start	1.69	1.69	1.69	1.69	1.69	1.69
Rock Start	1.69	1.69	1.69	1.69	1.69	1.69
Bump Set Spike	1.69	1.69	1.69	1.69	1.69	1.69
Vegas - Backlog	1.69	1.69	1.69	1.69	1.69	1.69
Scoed King	1.69	1.69	1.69	1.69	1.69	1.69
Speed King	1.69	1.69	1.69	1.69	1.69	1.69
Finders Keepers	1.69	1.69	1.69	1.69	1.69	1.69

Please send a large S.A.E. to us right now for a Price List

PERIPHERALS	RRP	CASE
C128 Commodore Park	285.00	285.00
Sea Emma Keyboard	285.00	285.00
Disk Box 5.25" 80 Disks	50.00	50.00
Disk Box 5.25" 100 Disks Lockable	9.95	9.95
Amstrad 5050 Keyboard	12.95	12.95
Quickstart 2 Turbo	12.95	12.95

Please make all cheques payable to:

DEE JAY SAVERS

62 Eagles Close, SITTINGBOURNE, Kent ME10 3RA

Send self-addressed envelope now!!!

Starting computer for incredible Price List.

Telephone: (0795) 27783 or (0683) 32781

SECTOR SOFTWARE

0772 454328

QZ - QL - Z88 FILE TRANSFER

QZ will transfer files, documents, programs etc from the Z88 to the QL, or QL to the Z88. Print Z88 files on the QL printer, directory files with file sizes, rename files, transfer part of file or whole file, full compatibility with Task Master.

Supplied on 3 1/2" floppy disc or microdrive.

QZ software £15, QL-Z88 lead £8 or both for £22.50

Send now for our FREE Z88/QL product guide/price list (state which).

SECTOR SOFTWARE

39 Wray Crescent,

Ulnes, Walton, Leyland, Lancs. PR5 3NA

Prestel Mailbox 772454328

ADVERTISING RATES FOR MICRO-FILE

Semi Display
Lineage

£8 per single column centimetre (+VAT)
35p per word (+VAT)

CALL SUSANNAH KING or ROBERT COLE on 01-834 1717 FOR SEMI DISPLAY ADVERTISING

9" MONITOR
£16

9" VDU OR MONITOR ideal to work with computer or video camera uses Philips black and white tube ref N24 306W. Which tube is explosion and X-Ray radiation protected. VDU is brand new and has a time base and EHT circuit. Requires only a 10V dc supply to set it going. It's made up in a lacquered metal framework but has open sides so should be cooled. The VDU comes complete with circuit diagram and has our six months guarantee. Offered at a lot less than some firms are asking for the tube alone, only £16 plus £5 post and insurance.

COMPACT FLOPPY DISC DRIVE EME-101

The EME-101 drives a 3" disc of the new standard which despite its small size provides a capacity of 500K per disc, which is equivalent to the 3½" and 5¼" discs. We supply the Operators Manual and other information showing how to use the unit with popular computers: BBC, Spectrum, Amstrad etc. All at a special price of £27.50 including post and VAT. Date available separately £2, refundable if you purchase the drive.

COMPUTERS

COMPUTERS the Acorn "Electron" as used in many schools for games and serious jobs. Works into colour or Black and White TV. Proper price was £199, our price, tested and working £45 + £3 post, tested but slightly faulty £38 + £3 post. All are complete with mains P.S.U., 300 page handbook, TV lead, and starter cassette. Full range of Software also in stock at very low prices. Sample pack of 5 £4.

£1 BAKERS DOZEN PARCELS

There's over 400 packs in our Baker's Dozen range and you become entitled to a free gift with each dozen packs. A classified list of these packs and our latest "News Letter" will be enclosed with your goods, and you will automatically receive our next news letters.



TRADE ENQUIRIES INVITED

J & N BULL ELECTRICAL

DEPT. P.C., 250 PORTLAND ROAD, HOVE, SUSSEX BN3 50T

MAIL ORDER TERMS: CASH, P.O. or cheque with order. Orders under £20 add £1 service charge. Monthly account orders accepted from schools and public companies (min. £20). Access & 8/ card orders accepted. Phone Brighton (0273) 734648 or 293700.

Athena Consultants

33 Holly Grove,
Fareham, Hants PO16 7UP
Tel: 0329 282083

ALL DISCS SUPPLIED WITH LABELS
AND LIFETIME GUARANTEE

Disc manufacturer Memorax

Description	Price
3-5 DS/DD 10 discs	£11.50 inc.
3-5 SS/DD 10 discs	£10.95 inc.
Storage Box (holds 10 discs)	£1.30 inc.
Popular Computing Weekly Special Offer only	
1 free disc box worth £1.30 with ten discs	
Quantity Discount starts at 50 discs	
3-5 DS/DD 50 discs	ONLY £52.90 inc.
	(92p each + VAT)
3-5 SS/DD 50 discs	ONLY £49.90 inc.
	(87p each + VAT)
3-5 DD 100 discs £100. 3-5 SS/DD 100 £94.30	

Despatch by 1st class post

Remember prices include VAT, postage and labels. All discs by top manufacturers with a Lifetime Guarantee. PLUS a 14 Day Money Back Guarantee.

OL Turbiquil described as "Absolutely Essential" by OL World now has even faster version, OL Turbiquil + for expanded memories OLs only. OL Turbiquil + only £13.50 please state mdv or 3-5 inch disc & quill version.

To take advantage of these very low prices, send cheque/P.O. to:



Athena Consultants

Dept (POP), 33 Holly Grove,
Fareham, Hants PO16 7UP
Tel: 0329 282083

Prestel MBX 329282083

CALL FOR THE LOWEST
PRICES FOR QUANTITY IN U.K. (114)

Atari ST Software

Tracker	£18.95	TNT	£15.95
Frighter Gen	£18.95	Dyn	£18.95
Advanced	£18.95	Phantasia III	£18.95
Act Studio	£15.35	Barbarian	£18.95
Indiana Jones	£18.95	Road Runner	£18.95
Terrorists	£18.95	Gold Of The Nile	£18.95
Ta Pan	£15.95	Sidewalk	£18.95
F15 Strike Eagle	£18.95	Wing Eagle Hunt	£15.95
Starship	£12.95	Eden	£15.95
Balance Of Power	£22.95	Quartet	£15.95
First Wind Plus	£57.00	Four Basic	£69.95

Software Specials

MAJUD	£2.99	AMSTRAD CPC	£2.99
BRICS	£2.99	Yarlung Fu II	£1.99
SPEC C64 AMS	£2.99	Solo Wolf	£1.99
		The Boiling	£1.99
		Return To Oz	£1.99
		Return To Oz	£1.99
		Bobby Boning	£1.99

ATARI 520 STFM

£269.95

Includes: mouse, UK language disc and five discs full of public domain software

COMMODORE 64C

SPORTS PACK

£169.95

Features Commodore 64C, Commodore C2N cassette unit, Quickshot 1, joystick, Commodore Sports Hoddle, Barry McKelgan's Boxing, Great American Sports Road, Decathlon, On Field Football Star, League Baseball Plus
FREE Intro to Basic Part One and one game cartridge worth £29.95

Software Latest Releases

World Class Lendman	£3	SP	AM
World Class Lendman	£3	SP	AM
World Class Lendman	£3	SP	AM
World Class Lendman	£3	SP	AM
World Class Lendman	£3	SP	AM
World Class Lendman	£3	SP	AM
World Class Lendman	£3	SP	AM
World Class Lendman	£3	SP	AM
World Class Lendman	£3	SP	AM
World Class Lendman	£3	SP	AM

Software Specials

MAJUD BRICS £2.99 SPEC C64 AMS	DONKEY KONG £2.99 SPECTRUM AMSTRAD	HARDBALL £2.99 SPECTRUM	TEMPLE OF TERROR £2.99 COMM. SPEC	BUBBLER £2.99 SPECTRUM	INDOOR SPORTS £1.99 C64, SPEC AMSTRAD	TAG-TEAM WRESTLING £2.99 COMM. C64	IT'S A KNOCKOUT £2.99 C64, SP, AMS	VICTIM £2.99 COMM. AMS, C64	KAYLETH £2.99 COMMODORE C64
KNIGHT GAMES £1.99 C64	KRAKOUT £2.99 SPECTRUM, C64 AMSTRAD	MARTIANOIDS £2.99 SPECTRUM	EVOLUON £2.99 C64 SPECTRUM	LITTLE COMPUTER PEOPLE £2.99 SPECTRUM 128 COMMODORE 64	XEVIOUS £1.99 SPECTRUM, C64 AMSTRAD	MONTY ON THE RUN £1.99 SPECTRUM	BUTCH HARD GUY £2.99 SPECTRUM	KORONIS WFF £2.99 COMMODORE 64 SPECTRUM	HACKER £2.99 SPECTRUM 48K SPECTRUM 128K
SHOOT EM UPS comprising: Savage Jason Gun Zone Blue Max 2 Fast Assault £3.99 Commodore 64	STAR GAMES 1 comprising: Way of the Tiger Rescue on Fractalus Garry McKelgan Boxing Beach Head 2 £3.99 C64, Spectrum, Amstrad	UNBELIEVABLE ULTIMATE comprising: Arctic Attack Savage Wolf Underland Alan 8 £2.99 Spectrum only	UNBELIEVABLE ULTIMATE VOL 2 comprising: Lower Atlantis Jungle Tropic Ape Pant £2.99 Spectrum only	CLASSIC COLLECTION Alan 8 Wishes Cardiac Puzzle Range Battle of the Planets Cyber Run £2.99 Commodore 64	SPECTRUM STINGERS comprising: Bruce Lee Pole Position Cyber Run £2.99 Spectrum only	AMSTRAD ACADEMY Zero Shovel Run Bounty Bats Backyard Brawl Indy £2.99 Amstrad only	UNBELIEVABLE ULTIMATE comprising: Emmerdale Sheik of Marmah Blackout £2.99 Commodore 64	SCOTT ADAMS SCOOPS Puzzle Adventure Strange Delivery Vandalia Castle Backyard Brawl Dish LEE £2.99 C64, Spectrum, Amstrad	PLATFORM PERFECTION comprising: Zorro Bounty PCB Dish LEE £2.99 Commodore 64
CHEYET 125+ JOYSTICK £9.95	COMMODORE C2N CASSETTE RECORDER £29.95	PROGRAMMERS REFERENCE GUIDE C64 £4.95	AMSTRAD PCW 9512 £449 + VAT IN STOCK NOW!! Save over £50			INTERNATIONAL BASIC CARTRIDGE C64 £3.95	SIMONS BASIC CARTRIDGE C64 £9.95	KONIX SPEEDKING JOYSTICK £10.95	MSA

17 Campbell Street, Belper, Derbyshire DE5 1AP. Telephone: 077382 6830

Please make cheques/P.O.s to Mail-Centa: Telephone orders using Access/Visa welcomed. All orders despatched same day whenever possible.

Postage: UK FREE over £5 (not books); under £5.00 please add 50p; strictly mail orders only

STORT SOFT

ATARI MAIL ORDER SPECIALISTS

INCREDIBLE LOW PRICES!

ALL DISKS CARRY A NO DOUBLE REPLACEMENT GUARANTEE ARE CERTIFIED 100% ERROR FREE AND COME WITH LABELS, 5 1/4" ALSO HAVE SLEEVES AND WRIT PROTECTORS. FLIP DISCS HAVE TWO INDEX HOLES AND TWO NOTCHES.

SPECIAL OFFER !!

25 SS 48TPI 5.25" DISCS & 100 CAP LOCKING DISC BOX	£16.00
60 SS 48TPI 5.25" DISCS & 100 CAP LOCKING DISC BOX	£25.00
100 SS 48TPI 5.25" DISCS & 100 CAP LOCKING DISC BOX	£39.95
25 DS 48TPI 5.25" DISCS & 100 CAP LOCKING DISC BOX	£17.00
60 DS 48TPI 5.25" DISCS & 100 CAP LOCKING DISC BOX	£26.50
100 DS 48TPI 5.25" DISCS & 100 CAP LOCKING DISC BOX	£42.00

5 1/4" DISCS FROM AS LITTLE AS 33 PENCE

BLANK 5 1/4" DISKS

DISK NOTCHER FREE WITH EACH 100 DISKS PURCHASED

UNBRANDED	TRIAL 10	25	50	100	10 in a plastic tin case
SS48 TPI	£4.50	£9.00	£17.00	£33.00	£5.50
DS48 TPI	£5.50	£11.00	£19.00	£35.00	£6.50
CS36 TPI	£6.50	£13.00	£21.00	£37.00	£7.50
CS36 TPI FLIP SIDED	£7.00	£14.00	£22.00	£38.00	£8.00
MINI-M FLIP SIDED DS86 TPI	£8.95	£20.00	£38.00	£70.00	£9.95
MINI-M HIGH DENSITY 1.8meg	£23.00	£52.00	£100.00	£180.00	£24.00
COLORBUD - mix & match or all one colour					
SS48 TPI	£6.50	£12.00	£22.00	£42.00	£7.50
DS48 TPI	£7.50	£14.00	£24.00	£44.00	£8.50
CS36 TPI	£8.00	£16.00	£26.00	£50.00	£9.00
SPECIAL PRICE! Dylan DS48 TPI BOX OF 10 ONLY £10.95					

LOCKING DISK BOXES

5 1/4" HOLDS 40	£7.95	5 1/4" HOLDS 100	£9.95
5 1/4" HOLDS 50	£7.95	60/90 (HOLDS 60 3" or 90 3 1/2")	£9.95

3.5" SPECIAL OFFERS

25 DS/DO 135 TPI/MF/DO 80 or 90/95 locking disc box	£36.00
60 DS/DO 135 TPI/MF/DO 80 or 90/95 locking disc box	£59.95
25 DS/DO 135 TPI/MF/DO 80 or 90/95 locking disc box	£39.95
60 DS/DO 135 TPI/MF/DO 80 or 90/95 locking disc box	£60.00

FULL RANGE OF ATARI HARDWARE & SOFTWARE - BEST PRICES - RING FOR DETAILS! Just write for more information. Cheques etc. payable to STORT SOFT (International orders add 10% and retain in pounds Sterling by bank draft or int. money order. Write for quote in any other currency.)

ACCESS/MASTERCARD/EUROCARD/VISA accepted. CREDIT CARD ORDER LINE - 0279 89509 24 HOURS A DAY, 7 DAYS A WEEK - VAT & P.P. INC. NO HIDDEN EXTRAS - WHAT YOU SEE IS WHAT YOU PAY

18 CROWN CLOSE, SHEERING, BISHOP'S STORTFORD, HERTS CM22 7NX

★ EXCEPTIONAL VALUE ★

25 5.25" DS-DD DISKS

plus
100 CAPACITY LOCKABLE DISK BOX
FOR ONLY £17.60 VAT & Delivery inclusive
All above inc. etc. (retrofits, label sets and hub rings or

50 5.25" DS-DD DISKS

plus
100 CAPACITY LOCKABLE BOX
FOR ONLY £27.10
VAT & Delivery inclusive

Cheques or PO's to:

Manor Court Supplies Ltd

Glen Celya House, Penybont, Llandrindod Wells,
Powys LD1 5SY. Telephone: 0597 87 784

☐ Educational and HMG orders accepted ☐ Trade enquiries



(228)

IF ANYONE DOES ANYTHING CHEAPER WE WILL BEAT THEM!

Phone on the best price.

5 1/4" DS D/D	3 1/2" DS D/D
10.....£5.90	10.....£10.90
25.....£12.50	25.....£28.95
50.....£19.95	50.....£55.75
3" MAXELL CF2 (10).....£20.00	
80 capacity 5 1/4" LS.....£11.00	Spectrum 128+.....£99.00
100 capacity 5 1/4" LS.....£18.00	Citizen 2 cel. dot matrix printer.....£28.95
3 1/2" 1/2" library cases.....95p	Datamatic joystick.....£8.99
40 capacity 3 1/2" LS.....£7.95	C2M data recorder.....£25.99

All prices include VAT and postage.
ALL TRADE ENQUIRIES WELCOME.

M.D.S. Computer Supplies
11 Church Street, Banbridge BT32 4AA
Credit Card Hotline 10am-7pm
(02626) 23477

A Division of Brooklands Enterprises Ltd.

(468)

COMPUTER STATIONERY

PRINTER PAPER - Continuous fan fold, sprocket fed.	10	25	50	100	500	10 in a case
SWIFTS	55.00 (MF20)	11.95	29.00	67.00	90.00	7 14.95
50.00 (MF20)	13.95	33.00	82.00	110.00		
LABELS - Continuous fan fold, sprocket fed.						
	70mm x 36mm	80mm x 36mm	102mm x 36mm	80mm x 48mm		
1000	£4.15	£7.50	£14.50	£15.50		
2000	£7.50	£14.50	£24.00	£10.50		

Please specify number of labels across (1, 2 or 3)

BOOKS - END OF SUMMER BARGAINS!

	Publisher	R.R.P.	Our price
Atari Basic	Wiley	29.75	£5.50
Atari Graphics & Sound	Wiley	£9.00	£4.95
Atari 1300E Math. Lang. For Beginners	Wiley	£6.95	£4.00
Atari 1300E Games Book	Malborne	£6.95	£4.00
Advanced Spectrum Mach. Lang.	Malborne	£6.95	£4.00
Math. Calc Applications for ZX Spectrum	Surborne	£16.95	£4.00
Creating Arcade Games on your ZX Spectrum	Interface	£3.95	£2.75
Advanced Mach. Calc Programming for CEM64	Granada	£7.75	£5.95
The Complete Commodore (488 pages)	Granada	£9.95	£8.95
Machine Code Master (A Library of M/C Routines)	Surborne	£8.95	£5.25
Commodore 64 Assembly Language	Shiva	£7.75	£5.95
Advanced Commodore 64 Basic Rewritten	Century	£6.95	£5.95
Micro Wars On The CEM 64	Century	£7.75	£5.75
Business Applications For The CEM 64	Surborne	£5.95	£4.50

ATARI HARDWARE - BARGAIN PRICES

520 STFM £273.95	1040GTF £425.00
-1040 STF & SM125 mouse monitor	£570.00
Mega ST (2 megabyte RAM & 1 meg drive)	£845.00
Mega ST (2 megabyte RAM & 1 meg drive) & SM125	£1375.00
Mega ST 4 megabyte RAM & 1 meg drive	£1095.00
Mega ST 4 megabyte RAM & 1 meg drive) & SM125	£1790.00

All Hardware comes with free dust cover! All ST's come with 5 public domain disks including CP/M emulator and the arcade game Nagaland. 5 blank disks to get you going. Basic language disk and manuals.

COMPUTER ACCESSORIES

5 1/4" DISK NOTCHER (Double your disk capacity on a single sided drive)	£3.95
DISK CLEANING KITs (Double your disk capacity on a single sided drive)	
5 1/4" IBM/ASTROD 1512 to CENTRONICS PRINTER LEAD (2 metres)	£4.95
ST TO RS232C MODEM LEAD (2 metres)	£3.95
BATTERY POWERED MINI-VAC - for keyboards, printers etc.	£3.95

(461)

ARE YOU THROWING YOUR MONEY OUT OF THE WINDOW



HAVE YOUR FABRIC REBANDS RE-INKED FOR ONLY £1.50

OR RE-INK YOUR OWN DRP 2000 / DRP 3000 IN 15 MIN. OR GET COMPRESSED 3" SPARE REBAND

A BOTTLE OF SPECIAL INK AND FULL INSTRUCTIONS FOR REBAND WILL RE-INK OR REBAND AS MANY

ONLY £12.95 £10.00 OVER TEN DOZENS UNITS SOLD AT REDUCE

CONTINUED PAPER & EISC LABELS	OUR PRICE	5.25" DISK REBANDS	OUR PRICE
2000 SHEETS A4 Bright	£14.95	AMS 3 1/2" 40LBS 20 x 2" 210CS - 1000S	£9.75
1000 SHEETS 80g	£12.95	100 40LBS 100 x 3 1/2" 210CS - 200	£9.75
AMS 100 40LBS 100 x 3 1/2" 210CS	£19.95	100 3 1/2" 40LBS 100 x 3 1/2" 210CS	£19.95
100 3 1/2" 40LBS 100 x 3 1/2" 210CS	£19.95	100 3 1/2" 40LBS 100 x 3 1/2" 210CS	£19.95
100 3 1/2" 40LBS 100 x 3 1/2" 210CS	£19.95	100 3 1/2" 40LBS 100 x 3 1/2" 210CS	£19.95
100 3 1/2" 40LBS 100 x 3 1/2" 210CS	£19.95	100 3 1/2" 40LBS 100 x 3 1/2" 210CS	£19.95
100 3 1/2" 40LBS 100 x 3 1/2" 210CS	£19.95	100 3 1/2" 40LBS 100 x 3 1/2" 210CS	£19.95

NEW LOW PRICE 18 3/4" 3" REBANDS SUITABLE FOR 100 AND 200 DRIVE ONLY £24.95

PCW STARTER PACK 10 3/4" 3" REBANDS SUITABLE FOR 100 AND 200 DRIVE ONLY £24.95

FREE SOFTWARE WITH EVERY COMPUTER

PC 1512 SINGLE DISK DRIVE WITH 12" MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 SINGLE DISK DRIVE WITH 14" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 12" MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 14" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 16" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 18" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 20" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 22" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 24" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 26" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 28" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 30" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 32" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 34" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 36" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 38" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 40" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 42" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 44" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 46" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 48" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 50" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 52" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 54" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 56" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 58" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 60" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 62" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 64" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 66" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 68" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 70" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 72" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 74" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 76" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 78" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 80" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 82" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 84" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 86" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 88" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 90" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 92" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 94" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 96" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 98" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00
PC 1512 DOUBLE DISK DRIVE WITH 100" COLOUR MONITOR	£415.00	4 1/2" 5.25" DISKS & 10000 ABILITY 128K-256K	£415.00

SEND FOR OUR CATALOGUE BY OVER THREE THOUSAND TITLES FOR AMSTRAD CPC - PCW - PC - COMPARE SPECIFICATIONS

ATARI ST ATARI ST BASIC ELECTRONIC APPLE II - APPLE II COMPATIBLE COMPUTERS ALL AT DISCOUNT PRICES

ALL PRICES INCLUDE V.A.T. 1. POINT A PURCHASE OR ONLY - EXPORT QUOTATIONS AVAILABLE

COMSOFT IMPORTERS AMSTRAD COMPUTER SUPPLIES

COURTESY COMPUTER CENTRE 40 BAKE STREET, COLCHESTER, SUFFOLK. TEL: 047

SHIP ORDER SAT 1.30-12.00 1.00-5.30 TEL: 0206 2076 24-HOUR ORDER SERVICE ON 0206 2054

FOR SALE

PANTHER SOFTWARE LATEST RELEASES!!!

EASY SPELL The learning game - Phone for details

Company '87

The Business Simulation
Game for the inquisitive mind - £14.99

Daily News

Do you have the perseverance to run a
daily newspaper? - £9.99.

Games, Educational and Business Software for the
Amstrad PC and IBM-compatibles

STOP PRESS !!

See Quarter page advert for best prices on all machines!!!

2 River Way Gardens, The Meadows, Nottingham NG2 3LL

Telephone: 0602 860664

Trade enquiries welcome

IT DOESN'T HAVE TO COST A FORTUNE !!

NOT ALL
DISCS
ARE EQUAL



WHY NOT USE
THE SAME
AS THE PRO'S

To make your computer SMILE!!

Professional discs at unprofessional prices!!

5 1/4" d/s d/s discs with free plastic case	£6.00
3 1/2" d/s d/s discs with free plastic cases	£14.50
5 1/4" Lockable disc boxes (holds 100)	£8.75
3 1/2" Lockable disc boxes (holds 80)	£8.75

We offer you a wonderful service all because you come first.

All prices inc. VAT & P.P.

These discs are exceptional quality and are used throughout
the industry.

Phone

Me NOW

M. Wood Discs

27 Burford, Brookside, Telford TF3 1LQ

Telephone:

0952 590156

(H80)

PANTHER SOFTWARE!

"The No. 1 Mail Order Centre"

More stock than you can imagine. Please send S.A.E. envelope for list, state which computer you want info on.



Title	Our Price	Title	Our Price
Backstreet	22.49	5 1/4" SPECIAL OFFER 5 1/4"	
Paradise	22.49	Games 11 and 12	20.99
Fourth Protocol	17.95	120 Capacity disc box and 25 discs	25.49
Endgame	17.95	disk	25.49
Also: Hyper Reader	17.95		
Cyber II Chess	17.95		
Missy Games	17.95		
Pin 2	17.95		
15x15 Standard Type	1.80		
15x15 Standard Type	3.45		
Jeopardy (75) Chess	8.95		
Jeopardy Match 1	12.99		
Jeopardy Match 2	6.95		
Jeopardy Match 3	9.95		
IBM PC Games			
Bowling Ten	22.49		
Diamondship 10	30.95		



Title	Our Price	Title	Our Price
World Games	22.49	World Games	22.49
Press Master	26.49	Press Master	26.49
Hold'em	63.95	Hold'em	63.95
Lenny's Computer	67.95	Lenny's Computer	67.95
Amnesia	28.49	Amnesia	28.49
AMERICA Games		AMERICA Games	
Gold	30.95	Gold	30.95
Hold'em in gold	28.49	Hold'em in gold	28.49
12 Cities of Gold	25.49	12 Cities of Gold	25.49
Stylus	20.49	Stylus	20.49
Star Trek	22.49	Star Trek	22.49
Balloon	20.49	Balloon	20.49
Black Hole	22.49	Black Hole	22.49
Secret Service	22.49	Secret Service	22.49
Master of Power	34.50	Master of Power	34.50
Barbaric	28.49	Barbaric	28.49
101	28.49	101	28.49
Speed	28.49	Speed	28.49
Winter Games	22.49	Winter Games	22.49

Orders under £7.00 please add 50p for P&P.

Please make all cheques payable to PANTHER SOFTWARE, 2 Riverway Gardens, The Meadows,
Nottingham NG2 3LL or Phone: The Hotline 0602 860 664

Available on stand
3040 at PCW Show

80 TRACK / DS DD 5 1/4" HALF HEIGHT DISC DRIVES

Made by a well known quality PC manufacturer
but surplus to requirements due to the need for
40 track IBM compatibility. Uncased bare drive
- £60. Drives in cream metal cases - £70. Cased
drive with connecting leads to suit BBC micro -
£74.95.



Money back if not satisfied and returned undamaged within
7 days. Callers welcome Mon-Fri 9-5.

Pinboard Computers Ltd.

Unit 9, Bondor Business Centre,
London Rd, Baldock,
Herts SG7 6NG
Tel: (0462) 894410

Prices include VAT, packing
and parcel post.



(477)

FORM FINDER RACE RATING SYSTEM

Rates, Races in Seconds using information from the racecard
appearing in your daily paper. No updating of data required,
systems lasts virtually for ever. Can be used for National Hunt and
Flat racing all year round.

Saturday 5th September 1987, 14 races to rate,

8 WINNERS CLEARLY RATED.

Actual results: W 7/1	W 13/8
W 4/1	W 6/4
W 5/2	W 11/8
W 2/1	W 8/11
2nd 2/1	(Five unplaced)

Non BBC/Electron owners can produce the system to use
independently of their micro, ratings produced are exactly the same,
but if preferred the method can be converted into programme form.

BBC/Electron owners can purchase this system in ready made
programme form.

BBC/Electron Cassette..... £15.00
or Rating System..... £15.00

Also available

FORM FINDER II Fixed Odds/Pool's Forecaster

Requires no updating of data; can be used in any league:
Australian Vauxhall/Opel, British etc.

Type in details from the fixtures list appearing in your daily
paper for forecasts of Home, Away, Score and No Score draws of
any match displayed in seconds. Use the perm we suggest for
guaranteed winning lines within 12 weeks or money refunded

BBC/Electron Cassette..... £15.00
(Others - S.A.E. for details)

All orders/enquiries to:

ALLAN DATA (PC5),

1 Lorn Road, Dunbog, Connell, Argyll PA37 1QG

All orders despatched by return

Telephone 0631 62923

(463)

CRIBBAGE

The popular pub game six card cribbage is now available for the Spectrum 48K/128K

Features include:

- IMPRESSIVE FULL COLOUR
- PLAYING CARD GRAPHICS
- 100% MACHINE CODE
- TWO LEVELS OF PLAY
- AUTOMATIC SCORING
- HELP OPTION FOR BEGINNERS

Six card cribbage is suitable for both beginners and experienced crib players and comes with full instructions and rules of the game.

★ ★ ★ ★ MONEY BACK GUARANTEE ★ ★ ★ ★

If you are not delighted with six card cribbage then simply return the tape within 5 days and your cash will be refunded.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Send cheque or postal order for £6.50 to

ESEM SOFTWARE

112 Wrington Close, Little Stoke, Bristol BS12 6EJ

Tel: 0454 612811

(280)

ATARI 520 STF NOW IN STOCK FOR NEW PRICE ONLY £289.95

Includes mouse controller, manual, language disc and starter pack

	RRP	OUR
Atari 1040 ST	£499.95	£369.95
Atari 1040 ST + SM125 mono monitor	£599.95	£469.95
Atari 520 STF	£299.95	£279.95
Atari Mega ST 2 + SM125 mono monitor	£999.95	£894.95
Mega ST4 + SM125 mono monitor	£1205.95	£1149.95
Atari 12" medium res colour monitor	£399.99	£369.95
Triangle 1 meg drive	£159.95	£139.95
Cumana 1 meg drive	£159.95	£144.85

ST SOFTWARE AT GIVEAWAY PRICES

Flight Sim II	£39.95	Centinel	£16.95
Knight Hawk	£16.95	Degas Elite	£24.95
Arctic Fox	£16.95	Chess Master 2000	£19.95
Music Construction set	£19.95	Sky Fox	£14.95
Bards Tale	£19.95	Art Director	£39.95
Gato	£24.95	Fantasy III	£19.95
Eagles Nest	£16.95	Barbarian	£19.95
Flip Side	£6.95	Mud Pie	£6.95
Terrapods	£19.95	Indiana Jones	£16.95

BLANK DISCS

10	20	50	100
£12.50	£23.50	£54.95	£105.00

Trade enquiries welcome

Lockable disc boxes 3.5" holds 80£9.95

Spend over £50 on Software and get a Free Calculator

HARDSOFT · INTERNATIONAL

1A The Square, Sawbridgeworth, Herts. 0279 726488/726406

Office automation at a price that is affordable. Lease an Amstrad PC1640 DD-MD + Epson printer + wordprocessor + spreadsheet, for under £7.00 per week.

As an approved dealer for Amstrad, Epson, Seikosha, Star, Olivetti etc., we offer free unbiased advice on various machines and software.

Our sales team can demonstrate any machine anywhere in Britain and will advise you on which of our eight different leases will suit your needs best. CONTACT US TODAY FOR A FREE QUOTATION

NATIONWIDE NEXT DAY DELIVERY ★ CONSUMABLES ★ FREE TAX & FINANCIAL GUIDANCE ★ CONTINUOUS STATIONERY ★ 24 hr MAINTENANCE CONTRACTS ★

WOW! WE! Look what else is on offer!

AMSTRAD
PCW 8256

£289 + VAT

ATARI STFm with mouse mat
+ FREE Gauntlet

£274.95 inc. VAT and P.&P.

PCW 8512 £389 + VAT
PCW9512 £489 + VAT

ALL WITH FREE
MAINTENANCE!!!

Super Calc 2 £44.95

Sage Accounts £54.95

Combase £43.99

Desk Top Publishers £24.95

AMSTRAD Registered
Business Dealer

Terrapods	£18.75
Tai Pau	£14.50
Phantasia 3	£14.95
Software	£14.95
Readrunner	£18.75
PC Dingo	£45.95

Runs IBM & PC
packages on Atari ST

AMIGA DEALS NOW

AMIGA A500 + Modulator +
Deluxe Paint

£529 inc. VAT and P.&P.

Terrapods £18.75

Goldrunner £18.75

Barbarian £17.95

Fairy Tale £35.95

Much more stock. Phone for quote!

HARDSOFT · INTERNATIONAL

1A The Square, Sawbridgeworth, Herts. 0279 726488/726406

(482)

AMIGA A500 NOW IN STOCK FOR ONLY £439.95

AMIGA HARDWARE

	RRP	OUR
Amiga A500 + 1081 colour monitor	£918.85	£879.95
Amiga 200	£1259.25	£1094.95
XT Bridge Card (Amiga 2000)	£573.85	£499.94
Internal 1 Meg Disc Drive (Amiga 2000)	£228.85	£199.95
1010 External Disc Drive	£286.85	£259.95
Amiga Internal 1 Meg Upgrade	£113.85	£99.95
Triangle 1 Meg Disc Drive	—	£139.95
Cumana 1 Meg Disc Drive	—	£139.95
Amiga (2000) 2 Meg RAM expansion	£458.85	£399.95

AMIGA SOFTWARE

Barbarian	£19.95	Sinbad	£34.95
Gold Runner	£19.95	Super Huey	£16.95
Terrapods	£19.95	Bards Tale	£15.95
Ogre	£19.95	Chess Master 2000	£19.95
Archon/Total	£17.95	Earl Weaver Baseball	£24.95
Fight Sim II	£39.95	Seven Cities of Gold	£12.95
Deluxe Paint II	£69.95	Mean 18 Golf	£24.95
Marble Madness	£16.95	Deep Space	£24.95
Instant Music	£19.95	Area/Bratiscus	£29.95

More Software than we can show please ring.

We are a Commodore appointed dealer
All trade enquiries welcome

(390)

SOUND N VISION

11 Silk St, Leigh, Lancs WN7 1AW.

Phone now for details - Tel: (0942) 673689

Cheques and P/Orders payable to: Sound N Vision P.&P./VAT INCLUDED

Visitors welcome in showroom. Send S.A.E. for price list.



FOR SALE

SOFTWARE CITY BARGAINS SOFTWARE CITY BARGAINS

SOFTWARE CITY USED COMPUTER PRODUCTS

SINCLAIR COMPUTERS

Spectrum 48K	£40.00
Spectrum Plus	£59.00
Spectrum 128K	£85.00
Spectrum Plus 2	£110.00
QL	£130.00

AMSTRAD COMPUTERS

CPC 464 Green	£135.00
CPC 464 Colour	£190.00
6128 Green	£230.00
6128 Colour	£270.00

DISC DRIVES

Commodore 1541	£115.00
Opus Discovery 1	£100.00
Opus Discovery Twin	£150.00

JOYSTICKS/INTERFACES

Quickshot 1	£5.00
Kempston Interface	£5.00
Ram Turbo	£10.00
Interface 1	£25.00
Interface 2	£10.00
Microdrive	£25.00

MISCELLANEOUS

Data Recorder	£10.00
Commodore 64 Datasheet	£20.00
Commodore 16 Datasheet	£20.00
Colour Monitors for	£125.00
Blank 5 1/4 Discs (new) for 10	£7.00

COMMODORE COMPUTERS

Commodore Vic-20	£30.00
Commodore Plus/4	£35.00
Commodore 16	£30.00
Commodore 64	£90.00
Commodore SX-64	£199.00

ACORN COMPUTERS

Electron	£40.00
BBC B (DFS/Isi 7)	£299.00
Disc Drives from	£50.00

PRINTERS

Commodore MPS801	£85.00
Commodore 1525	£55.00
Commodore 1520	£25.00
Alphacom 32	£25.00

USED SOFTWARE (Tested)

20 Different	£17.00
50 Different	£40.00
(Spectrum 64 and BBC only. Send a list of your collection so we know what not to send. State preferences, Arcade, Adventure or Mixed.)	

SPARES (New)

Spectrum PSU	£11.00
Commodore 64 PSU	£27.50
48K Membrane	£4.50
Plus Membrane	£7.50
Spectrum I/OA	£14.00

STARTER KITS

Spectrum 48K, Data Rec., Joystick, Interface, 20 Games	£75.00
Spectrum Plus, as above	£90.00

How to order: Send a cheque or postal order to the address below. All our used products are in excellent condition and guaranteed for 3 months. Price includes VAT and delivery. Please allow 14 days for delivery.

SOFTWARE CITY (PCW), 173 Mansfield Rd, Nottingham
NG1 3FR. Tel: (0602) 410493

WANTED: ALL TYPES OF SOFTWARE FOR CASH

RECRUITMENT

WE ARE . . .
A NEW INDEPENDENT LABEL WITH
INTERNATIONAL PUBLICATION
AND DISTRIBUTION BACKING

ARE YOU . . .
ABLE TO TAME UNRULY Z80
AND 6502 MONSTERS AND
MAKE THEM PLAY GAMES

WE WANT . . .
HUMAN BEINGS WITH A SENSE
OF HUMOUR WHO ALSO JUST
HAPPEN TO BE BRILLIANT
PROGRAMMERS



"IF YOU'VE GOT THE TALENT
- WE'VE GOT THE BOSH!"

PHONE 01-340 8785

OR WRITE TO PAUL SMITH

VIZ DESIGN: 28 LANGDON PARK ROAD
LONDON N6 5QG

SUPER FANTASTIC VALUE SUMMER MADNESS

Due to huge demand we have more stock available. Please contact us for
best prices on all software/hardware

CROWN CROWN CROWN CROWN CROWN

BUSINESS SOFTWARE

AMSTRAD CPC	TAPE	DISC
Mini Office 2	13.50	17.99
Quill/illustrator	21.95	—
Card Box	—	52.99
D-base 2	—	109.00
Art Studio	—	17.99
Popular Accounts	—	89.95
Super Calc 2	—	44.95
Tasprint	8.99	11.75
Tasword	17.95	21.99

AMSTRAD PC	TAPE	DISC
Wordstar	—	62.99
Card Box	—	62.99
D-base 2	—	109.00
Art Studio	—	17.99
New Word	—	62.00
Super Calc 2	—	44.95

AMIGA	TAPE	DISC
Instant Music	22.50	—
Music Studio	29.99	—
Deluxe Paint 2	62.95	—
Superbase Personal	89.95	—
+ Games at low prices	£60.00	—
New Release Spec.	—	—
Mercenary	8.95	—

COMMODORE 64	TAPE	DISC
Geos	47.50	—
Mini Office	—	22.50
Quill/illustrator	23.99	—
Advanced Art Studio	22.50	22.50
Music System	13.50	15.95
Art Studio	13.50	15.95
Tasword	12.99	17.99
Home Account	15.50	17.95

COMMODORE 128	TAPE	DISC
Swift Spread Sheet 128	—	21.99
D-base 2	—	109.50
C128 Compiler	—	38.50
Super Script 128	—	65.95

ATARI ST 128	TAPE	DISC
Mini Office 2	—	17.95
Music Creator	—	17.95
Print Shop	—	35.99
Stock Control	—	45.00
Waba Writer	—	53.95
+ Games at low prices - Phone	—	—

SPECTRUM	TAPE	DISC
Art Studio	12.99	—
Lastword	12.99	—
Mini Office	5.50	—
Quill/illustrator	19.95	—
Tasprint	8.50	—
Tasword 2	12.50	—
Tasword 3	13.99	—

POPULAR GAMES	TAPE	DISC
Elite	8.95	12.50
Fist II	8.95	13.50
Rena Rama	7.95	13.95
Marcross	7.95	13.99
Army Moves	7.95	13.95
Krak Out	8.95	13.99
Tomahawk	8.95	13.95
Short Circuit	7.95	11.50
Future Knight	8.95	13.50
Escape From Fines Castle	8.95	12.95
Hyper Ball	8.99	13.50
Light Force	7.95	13.50
The Double	8.99	—
Aes Of Aces	7.99	12.50
Cobra	7.95	11.95
Jail Break	7.95	13.50
Gunship	12.99	16.99
Breakthrough	8.99	13.50
Alien	7.99	11.50
Silent Service	8.99	13.50
Aut Widescreen Monty	7.95	13.99
Samurai Trilogy	8.95	13.50
Indoor Sports	7.95	13.50

CROWN COMPUTERS!!!

ANY PRICE AND WE WILL MATCH IT!!!

In Stock now

Atari 520 STFM	269.95
Amiga 500 Sports Bundle	519.00

NEW

PC 1640 Mono Single Drive	539.95
PC 1640 Colour Single Drive	699.95
PWW 95 12 Mono/M Daisy Printer + Software	539.95
PC 1512 Mono Single Drive	445.45
PC 1512 Colour Single Drive	599.00
Commodore, Amstrad, Spec 10% off RRP	

And remember our prices inc. P&P & VAT

47 Crown Drive, Spalding, Lincolnshire

Hotline: 0775 69058

No hidden extras what you see is what you pay!

Cheques and POs to:

CROWN SOFTWARE

47 Crown Drive,
Spalding, Lincolnshire.
Tel: 0775 69058

Send S.A.E. envelope to us now! for Autumn specials list (466)

SERVICES

COMPUTER REPAIRS

Fixed Super Low Prices!

Inclusive of parts, labour and VAT



**FIRST AID
FOR
TECHNOLOGY**

1 week turnaround

Free collections/delivery available for local area

★ AUTUMN OFFERS ★

SPECTRUMS	£14 inc. + Free Game
C64	£22 inc. + Free Game
C16	£18 inc.
VIC20, C+4	£22 inc.
BBC	£32 inc.
ELECTRON	£19 inc.
AMSTRAD 464	£32 inc. + Free Game
SPECTRUM 128	£16 inc.
C64 P.S.U. FOR SALE	£20 inc.

Please enclose payment with item - 3 month warranty on repair

Please enclose advert with repair

W.T.S. ELECTRONICS

5-9 Portland Road, Luton, Beds LU4 8AT. Tel: 0582 458375. Telex: 258571

FAULTY SPECTRUM?

As you are probably aware from press reports Sinclair Computers no longer have a repair department.

Our computer repair workshop has been an OFFICIAL Sinclair Repair Depot for the past six years and we are pleased to announce that we will continue to do your out of guarantee repairs as in the past.

Send your faulty computer **DIRECT**

SPECTRUM	£18.75 inc parts
ZX81	£11.50 inc parts
16K RAM	£9.95 inc parts
MICRODRIVE	£15.95 inc parts
INTERFACE 1-11	£18.75 inc parts

CALL OR SEND WITH CHEQUE OR P.O.

T.V. SERVICES OF CAMBRIDGE LTD
FRENCH'S ROAD, CAMBRIDGE CB4 3NP
Tel: 0223 311371

287V

FLOPPYSHOP ST USER GROUP and public domain library

We're an independent user group set up to support the ST community. For £5 annually you have access to one of the largest software libraries in Britain along with free subscription to a club magazine. The current issue is available as part of our introduction pack which you can get free by sending a S.A.E. to the address below. We charge only £3.50 per disc including I&P.

Floppyshop ST (A15)
50 Stewart Crescent, Northfield, Aberdeen

430/800

XL1E

LOOK

NOW

ST

ATARI OWNERS

Are you having difficulty finding suitable software? If so, then look no further. We have available for both home and business use a wide range of software titles for both the UK and American lines to specification. Games and Utilities for all ages. Hardware and software advice on current prices and available regularly being updated. If you would like further information please write to a S.A.E. to:

CHALMERS' MAGNETICS AND GAMES
304 Waterloo Avenue, North, Loughborough
Leicestershire LE12 5BE

Tel: 0509 412004 (A15)

ARE YOU IN A RUT??

Then climb out by learning to use your
COMPUTER for pleasure, personal or business
use with our unique range of . . .

HOME LEARNING COURSES

Phone (0206) 560783 24 hours

or send for FREE details to:

MICROWISE UK, FREEPOST, Colchester CO3 4BR

Name..... Micro.....
Address.....

P39

(A73)

ADVERTISING RATES

CALL SUSANNAH KING or ROBERT COLE

on 01-834 1717 FOR SEMI DISPLAY ADVERTISING

FOR SALE

Atari 800 XL / 130 XE Essential Utilities

Transdisk Version 3.0

The most powerful tape disc system for the Atari now made even better. Transfers computer, machine code, "text" supports games or any other software in 100's. Single, multi-stage and new menu now standard format tapes present in Trans disk. Plus, enjoy the convenience of loading and running your newly transferred software from an automatic disc menu. No other tape to disc utility for the Atari is as powerful or successful as that £19.95 we. Supplied on disc with set of instructions.

The Freezer!

An amazing new utility for the Atari "Freezer" programs while they are RUNNING on your computer. The Freezer then takes over control and allows you to make a back-up copy of the frozen program. The back-up copy will load and restart from the frozen point, on ANY Atari XL/XE computer, independent of The Freezer! Frozen disk 80 tape programs even those that are heavily program based to save - not only to freeze the program in memory then export a blank disc and let another guy to save - that's of £19.95 we.

Send an S.A.E. or phone for more details of these utilities.

Special offer order both programs together for £35.00

Make Cheque or P.O. payable to DIGICOMM and send your order to:

DIGICOMM

176 Bradford Common Boulevard, Milton Keynes, Bucks MK12 8BG. Tel: 0508 963709. (121)

BLANK CASSETTES

WITH LIBRARY CASSI

C10	C16	C30	C30
20	7.50	7.70	8.70
50	16.00	16.20	16.30
100	29.00	30.00	31.00

Fully inclusive (C.O.D. £1 extra)

DISKS

10 5 1/2 DS/DD
£6.00 inc. case
10 3 1/2 SS/DD
£11 inc. case
10 MAXELL 3 1/2 CF2
£20

MEMOTECH COMPUTERS AND ACCESSORIES

MTX 512 COMPUTER	£43.00
DMX 80 PRINTER	£180.00
RS232	£30.00
PASCAL ROM	£30.00
SPECULATOR ROM	£30.00
1 mb. disk DRIVE & INTERFACE	£160
1 mb. disk DRIVE & INTERFACE	£160

All the above prices are fully inclusive. We stock the entire Memotech range. Tel: 0909 600000 to 0909 600001

UK HOME COMPUTERS

42 CROOKVALE AVE, SWINDON, WILTS BA2 1LH

24-hr Phone Service 0793 656334

SINCLAIR QL Extended Basic - Only

£8.95! Over 1000 extensions at under half normal prices. Supplied on micro-disk. M. Waine, 18 Holly Grove, Stourbridge, West Midlands DY8 1UF. Tel: 0384 373421. Evenings.

ST Public Domain Software from only £1.50 per disc for list. Send a stamp to: Softfile, 55 Highfield Avenue, Waterloo, Hampshire PO7 7PY. **PACE 5 1/2"** disc drive with Amstrad CPC Interface & 60s, £145. Tel: (01) 302 9984.

AMIGA

PUBLIC DOMAIN SOFTWARE

We have the very latest Disk II numbers 01 to 408 and Amiga numbers 01 to 402 disks in stock. For a full details of programs contact PLUS (Tutorial) TO Without Team! PLUS the JIMPESS Magazine PLUS a collection of magazines and articles from previous issues of JIMPESS. Send a £3.00 cheque/PO for the "JIMPESS SAMPLE". We will send a copy for review.

George Thompson Services Ltd.
94 Bridge Road, Southwark, Surrey SE1 7ER
Tel: 071-754 4675 (291)

ATARI ST

PUBLIC DOMAIN

Why reinvent the wheel? We have a large selection of languages, demo's, utilities, cartoon's and games etc. available. A stamp for our list will save you hours of frustration.

DISCS FROM £2.50

MICROST

9 Abingdon Gardens, Bath, Avon BA2 2UY (178)

TEXT COMPRESSION

Compress English Text by up to 80%. Add 32 commands to Amstrad CPC Basic. Manipulate RAM files.

Buy TEXTPAK 10K ROM £20

KIRKSFOT, Glastonbury, Bathferry, Uxbridge, London, N. Ireland (S.A.E. for details) (A88)

DUPLICATION

For records

COMPUTER PROGRAMS

REAL TIME or HIGH-SPEED professional Cassette Duplication and Blank 1 in 1,000+ Computer printed cassette blank. BBC & PC Disc copying 1 to 500+ Fast Security Software Services. **FLTRBOND LTD.** - JBS RECORDS DIV. FREEPOST, 18 Sadler's Way, Northwood BC14 2BR. 0982 900101 17

RIBBONS

ALADDIN

FABRIC RIBBON CASSETTE RE-WINDING

Trial offer: £1 per ribbon

Post used cassettes with payment to:

ALADDIN (Dept PC),

4 Hutter's Crescent, Northwood BC14 2BR.

Berkshire TD14 5AP

Tel: 08907 50965 (336)

CBM 64 cassette software, includes

Parallax, Supercycle, cheap prices.

Some disc software. Also NEOS

mouse £12. S.A.E.: Nigel Wilkin-

son, 27 Mornington Road, Chingford,

London E4 7DT.

EAST LONDON MICRO SERVICE CENTRE

Spectrum, Commodore, Amstrad,

Atari, MSX plus peripherals.

Turnaround typical of 2-5 days.

Three months warranty

guaranteed.

Postal repairs undertaken.

Computer IC's components sold.

Budget games, software and

accessories sold. Mail order

welcome. Trade enquiries

welcome. Open 9am-5pm Mon.-Sat

SAN ELECTRONICS

63 Pleasant Grove, East Ham

London E6 1AD

Tel: 01-472 4871

Four minutes walk from Upton Park Tube Station. (348)

WANTED: Beta Disc interface for

48K Spectrum. Phone 0298 6800.

ATARI ST software, all originals,

boxed with manuals, only £12 each,

including postage. Sub-Battle, Gaunt-

let, Road War 2000, Autoduel, Phone

01-540 5614 (South London). After

6pm.

CPC 464 with colour monitor, lots of

games and magazines, £200 a.o. Tel:

(0205) 51402.

MICROVITEC 1451 medium resolu-

tion colour monitor, only 2 weeks

previous use from new, excellent con-

dition, gift at £200. Tel: 01-876

9531. Evenings.

AMIGA USERS contact the Klinka

Krew for buying, selling or swapping

latest software. 45 Downsfield, Ings-

bridge, Hull.

35 LONDON ROAD, TOOTING,
LONDON SW17 9JR

TIMESOFT TEL: **01-685 9849**



PLEASE PHONE IF YOU DO NOT SEE WHAT YOU WANT !!!



ATARI ST NEW RELEASES

1. Tai Pan£15.95
2. Terrapods£18.95
3. Indiana Jones£15.95
4. Degas Elite£23.95
5. TNT£15.95
6. OCPR Studio£18.95
7. Sentinel£14.95
8. Roadrunner£18.95
9. Gauntlet£17.95
10. Air Ball Con. Set£12.95
11. Night Knight Orc£15.95
12. Bureaucracy£24.95

ATARI ST SPECIAL OFFERS

1. International Karate£9.95
2. Music Studio£14.95
3. Paintworks£12.95
4. Winter Games£14.50
5. Strike Force Harrier£14.95
6. 10 Frame£14.00
7. F Bidi£23.50
8. Beep Space£22.95
9. Silent Service£15.95
10. Boulderdash Concept£15.95
11. Crystal Castle£12.00
12. Star Raiders£12.00

AMIGA NEW RELEASES

1. Marble Madness£15.95
2. GFL Football£17.95
3. FSDI£23.95
4. Defender Of The Crown£24.95
5. Deluxe Paint 2£64.95
6. Kings Quest 3£13.95
7. Basket Ball£12.95
8. Little Comp. People£14.95
9. Sky Fox£13.95
10. Winter Games£18.95
11. Fairy Tale Adventure£37.95
12. Chess Master 2000£19.95

HARDWARE
£275.00 ST20
STFM with software

HARDWARE
AMIGA A500
£499.00

PLEASE MAKE ALL CHEQUES PAYABLE TO TIMESOFT!

COMPUTER PROGRAMMER & GRAPHIC ARTIST

Additional staff are required to undertake interesting projects, for most popular home computers. Programmer applicants must be capable of machine code on any of the processes below:

6502
68000

Z80
8086

Successful candidates can expect to receive an excellent salary and performance bonus.

If you are capable of undertaking any of the listed above please contact in strictest confidence:

The Projects Director, Imagitec Design Ltd,
The Old Mill House, 118 Shillbank Lane,
Mirfield, West Yorkshire WF14 0QT

Hotline 0924 490345

M CRO SLE

1 THE SOUTH EAST

LONDON

DIGITAL SHADES LTD

✓ **Amiga 500**
Special offers

★ A500 plus starter kit & modulator
☆ **£499** ☆

 **Atari ST**
Special offers

★ Atari 520 STFM plus starter kit
☆ **£260** ☆

If you can't see the machine, peripheral, or software you want, then ring now for new low prices or send S.A.E. for mailing list.

(378)

Mail order hotline 01-471 7969

All prices include VAT

9 Selsdon Road, Upton Park, London E13 9BY

SOUTHEND-ON-SEA

ESTUARY
PERSONAL COMPUTERS

Commodore's Amiga A500 available NOW. Call for price.
Buy the Atari STFM at the new price – only £299 inc. VAT.
Software at discount prices.

Victoria Circus Shopping Centre
(escalator from railway station)
Southend on Sea
Tel: (0702) 614131

(289)

1 SOUTH EAST

SOUTHEND

A.S. and T. Ltd.

Largest Atari St dealer in Essex

Tel: 0702 510151
Unit 32/33
Rutherford Close
Eastwood Industrial Estate
Leigh-on-Sea
Essex

(Progress Road/A127)

(388)

2 THE MIDLANDS

NORTHAMPTON

A-Z COUNTY SUPPLIES

Large range of games and business software available at discounted prices.

MSX
ATARI ST
COMMODORE
SPECTRUM
AMSTRAD

Mail order enquiries welcome

174 Kettering Road
Northampton NN1 4BE
Tel: 0604 24380

(462)

DEALERS!

You can reach 40,000 readers for as little as £25 a week!
For more details phone Susannah on 01-834 1717

2 THE MIDLANDS AND NORTHERN ENGLAND

ASHBY DE LA ZOUCH

ASHCOM

Atari hardware

520 STFM, keyboard/mouse/0.5 meg drive	£259.95
1040 STF keyboard/mouse/1 meg drive	£439.95
1040 STF plus colour monitor	£799.95
SF 314 1 meg drive	£169.95

Commodore Amiga range

A500 4 + Offer Pack	£450.00
A1010 disc-drive	£249.95
3.5 inch discs DD/DS guaranteed (packed in 10s)	£12.50
50 bulk packed 3.5 inch discs DD/DS guaranteed	£50.00

Amazing prices on peripherals and all software. All prices include VAT at 15% and P&P on UK mainland. For more information call us on (0530) 411485 or send S.A.E. for full price list. To order send cheques/PO or Visa/Access details to the address below or phone with credit card.

ASHCOM

10 The Green, Ashby de la Zouch, Leicestershire LE6 5JU

(437)

LEICESTER

VISIT THE
**EAST MIDLAND'S
LEADING
ATARI DEALER**
FOR A FULL RANGE OF ATARI
AND ASSOCIATED PRODUCTS

3.5" DS/DD DISC'S
Guaranteed for Life



10 Discs + Library Box	£13.95
30 Discs + 40 cap. Lockable Disc Box	£39.95
30 Discs + 80 cap. Lockable Disc Box	£43.95

Visit our shop for greater discounts
on disc's

START The ST

Quarterly Magazine with
FREE DISC £12.95



All prices include VAT and postage in the UK
Cheques & postal Orders made payable to: abc

abc

135 St. Leonards Road,
Leicester, LE2 3BZ

abc

DEGAS ELITE
£24.95

CHESSMASTER
2000
£24.95

Just two great titles taken
from a vast range of software

520
ST FM
£279



(0533) 700190

(24hr Answerphone)
Norfolk (0328) 710316

HAYES

GOEL COMPUTERS

★ We deal in the whole range of
computers from PCs to Spectrums
★ Atari STFM now at the new price –
£275
with Ferguson colour monitor – **£450**

We are now also at

1000 Uxbridge Road, Hayes
Tel: 01-573 2726

45 Boston Road, London W7
Tel: 01-579 6133

(418)

MANCHESTER/HINCKLEY

COMLEX SPECIAL PRICES WITH THIS AD!

AMSTRAD SUMMER DEALS

Amstrad 1640 20Mb Tandem £999

Including twin floppy, Superdisk, 3.5 inch drive, 15MB, 15MB with Tandem 20 Meg hard card

add £199. All prices + VAT – prices for others not listed.

AMSTRAD PC

1200 Mono	£179	20MB Upgrade for Amstrad PC fitted if required	£245
2000 Mono	£179	Amstrad 1612 Mono (20MB Tandem)	£249
1200 Colour	£199	640K Memory	£249
2000 Colour	£199	Amstrad 1612 (20MB Tandem)	£249
1640 20 meg ECD	£199	640K Memory	£299
1640 20 meg	£199	Amstrad 128K memory upgrade	£29
1640 ECD	£199		

SUMMER SPECIALS

Tandem PCA20	£1349	Spoken LX3000	£189
Mini Combi 30 Meg card	£179	Star XL 10	£189 inc. interface
Tandem 20 Meg upgrade	£229	Cyber 1200	£189
Tandem 20 Meg business card	£229		

PRINTERS

For further lists of printers and machines see PCV			
--	--	--	--

ATARI

520STFM + maine monitor	£275	520STFM + Philips colour 8633	£450
		520STFM + Philips colour 8633	£399

COMMODORE

Amiga 500	£239	Amiga Bridge + £1	£204
Amiga 1000 modulator	£79	1000 to 500 Drive	£199
Amiga 1	£349	PL One Drive 20MB	£1099
Amiga 2	£1099	AT 20MB + 2 Drive 20MB	£1775
Amiga 2000 1MB	£1116		

GOVERNMENT AND EDUCATIONAL ORDERS WELCOME.

EXPORT ENQUIRIES WELCOME.

STANDARD DELIVERY IS AND NEXT DAY £3.50 – ADD 15% TO ORDER TOTAL

Comdex House, 28 Brindley Road, Hinckley LE10 1LA

(0455) 636883, Manchester 061-976 3763

(342)

3 SCOTLAND

AIRDRIE

J.C.S.

JOHN'S COMPUTER STORE

☆ Atari ST range
+ Amiga A500

☆ In Airdrie now –
Phone 0236 54260

Hardware and Software
all tried and tested

4 Graham Street, Airdrie,
Scotland ML6 9JP

CLEVELEYS

ELM COMPUTING
Amiga A500 – £469 + VAT
(Vouchers accepted)

Atari 520 STM – £269
Software for all machines at discount
including ST Amiga, MSX, BBC etc.

RRP	Our Price
MSX Mk1 Race	£1.99
ST Roadrunner	£1.79
	£24.99
	£18.95

Send S.A.E. stating interest to:
ELM COMPUTING, 36 York Avenue,
Cleveleys, Lancashire FY5 2UG
Tel: 0253 852882 (443)

STIRLING

TECH SUPPLIES

Ex-stock electronic
components, computers,
peripherals, word processors,
test equipment and office
equipment.

NO ORDER TOO SMALL
NO ORDER TOO LARGE

191 Winchester Avenue, Denny,
Stirlingshire FK6 6DE

Tel: 0324 825627

Open hours: 9am-4pm, 7.30pm-10.30pm (420)

EDINBURGH

The **AMIGA**
CENTRE SCOTLAND
Commodore Business Centre

Amiga A500 and A2000 now available.
Technical and software support to our
customers. Full range of AMIGA software and
peripherals.

Send S.A.E. for our software catalogue

4 Hart Street Lane
Edinburgh EH1 3RN

Tel: 031-557 4242 (24 hrs.) (375)

GLASGOW

**GLASGOW
COMPUTER CENTRE**

Atari appointed dealer
and Service Centre
Specialists in Atari ST Computers

VIRGINIA GALLERIES
(1st Floor)

33 VIRGINIA STREET
GLASGOW G1 1TU

Tel: 041-552 1522 (106)

Get responsible

There have recently been several letters in *Popular* regarding software piracy falling into two broad camps. On the one hand is the 'piracy is theft' band and on the other is 'they overcharge so why not get our own back' brigade.

People who pirate without conscience do neither themselves or others a favour. Yes, there are software houses who use their monopolistic position for profiteering. However, piracy is not the answer. The answer is to spend our money with the good companies who do not abuse their position.

Voting with our wallets gives support to the good companies and lets them know that an honesty company policy pays. Piracy equally hurts those who play by the rules and those who do not. If we want the honest candidate to win the election we must vote for him, not just tear up the other candidate's leaflets.

The other side of the coin is that the monopolistic power, and the abuses that go with it, conferred by copyright, must be curbed if software piracy is ever to be seen as wrong by the average user.

A recent letter likened a user who pirated software because of the cost of it to someone who steals petrol for his car. Fair enough, I cannot support stealing petrol, but at least the honest purchaser of petrol is protected by a bewildering variety of laws. If the petrol contains impurities which damage his car he can sue for the damage and expect full reimbursement.

Conversely all software contains a licence taking away all the user's rights. Is it fair that if a user pays hundreds of pounds (tens of thousands in the case of mini computers) for software he should not be able to sue for all losses resulting from negligent programming? Though losses may be consider-

able he is only entitled to the replacement of the fifty pence diskette.

Why should a bug in a program not be treated legally in exactly the same way as a real bug in a loaf of bread? The makers of both products are in business and will be at great pains to point out their professionalism. So hold both accountable to the consumer.

They can after all insure themselves and if they do not make mistakes often their premiums will be cheap. But if they make mistakes regularly they will soon find themselves out of business.

Licence agreements can also restrict how I use the software, but a petrol company cannot tell me where I can drive my car.

How many users have bought a word processor believing that the mail merge would be out 'real soon now' only to find that the software house decides it is uneconomical to produce a month later. A washing machine manufacturer must supply parts for his products for ten years by law.

On the subject of price it is not unfair to compare software to petrol. Copyright grants a monopoly and software houses can charge what they want. A gallon of petrol is about the price of a budget game because it is produced by many companies that must compete in a free market. If only one company was allowed to produce petrol, it would cost the price of an accountancy suite. Perhaps a parallel could be drawn with the Fair Rent Acts.

To sum up. Companies, please, give a good, professional service and treat users like free people not helpless slaves to be exploited. Users, please, remember that the only way to keep fair treatment going is to support those companies that practice it.

D R Halliwell

This week, due to overwhelming demand, we have decided that it is about time to launch a new puzzle.

And it has also been decided that the best people to think of a new format for the puzzle would be you, the readers.

So, in essence, this week's puzzle is to think of a puzzle; which will

start the week after next.

As with all other puzzles, the person who invents the most interesting format for the new puzzle (pew this is getting confusing, Ed!) will receive a prize, which for this special case will be £20.

Because this is such an important decision, we have decided to run

this 'design a puzzle' competition for two weeks, so the closing date is October 16.

Send all your ideas to Puzzle Ideas, Popular Computing Weekly, Greencoat House, Francis Street, London SW1P 1DG.

We expect to see wierder and more ingenious ideas than ever!

HACKERS



SEGA

THE ULTIMATE HOME VIDEO ARCADE MACHINE



This is SEGA – the powerful new video games system designed specially for the home and the whole family. It's compact and easy to assemble, and the high technology gives you sharp video images, vibrant colour and realistic sound!



With Sega, you get a complete, ready-to-use system. All you need is a TV! The package includes

games console (to run a card or cartridge), a FREE copy of the hit arcade game "Hang On", 2 control pads, a TV aerial fixture to let you watch TV even when the console's still connected as well as a fitted 3-pin plug and a special mystery game built-in and ready for you to find!

**GAMES!
GAMES! GAMES!**

Sports action, exciting thrillers and great arcade hits - there's a feast of fun covering

256k cards! And Sega has 1 megabyte and huge 2 megabyte cartridges to take the 40 new titles coming your way later this year including smash hits Out Run, Space Harrier and many more.

SEGA GIVES YOU ALL THIS FOR JUST £99.95!



LIGHT PHASER

Take aim and fire at your targets with ease – and stunning realism! **3-D VISOR GLASSES**
Get more out of your game – More force, more action and more amazing 3-D realism!

SEGA

The Ultimate Games Machine For Your Home

Choplifter®



World Grand Prix®



Super Tennis®



Space Harrier®



F16 Falcon®



Out Run®



Now the Summer will surely last forever!

The smell of the surf, the sun on your back, the sand between your toes... This isn't California Dreams - this is the real fix of the best West Coast sports designed to set your pulse racing! Now your friends with your screaming flying skateboard, take on show your cool looking at the wall.

Slide down the boardwalk, flip the Probe® and wheeled the BMX. And then the ultimate test - that King of Californian sports - showing the surf as you battle with those giant Pacific rollers to decide which surfer truly rules the waves!

It's all playing for big name sponsors like Power Skateboards, Ocean Pacific® S&D M&D, Probe®, Hacky Sack®, Money Snake®, Burton®, Skateboards and Skate® and countless in each pack you'll find a fun to enter competition to win quality products made by these companies too!

California Games™ features superb graphics, all the atmosphere of the West Coast, and one to eight.

players can take part. All the quality you expect from a Epyx product is here and so much more. We could tell you more but instead let's hear what the critics have to say.

"California Games is quite simply the apex of computer sports gaming, done in purely technical terms Epyx have somehow managed to surpass their own high standards - the pictures and sounds generated by this program are atmospheric beyond belief."

If you gather up all the expectations from previous Epyx reviews

and add them together, you just might go halfway towards describing California Games®.

— EASY 54

"California Games has to be the best release this year in the home of the individual games are almost worth the asking price on their own."

— COMMODORE COMPUTING INTERNATIONAL

Need we say more?

California GAMES™



CBM 64/128	'9.99	CASSETTE	'11.99	BOX
SPECTRUM	'8.99	CASSETTE		
SPECTRUM+3	'12.99	BOX		
AMSTRAD	'9.99	CASSETTE	'14.99	BOX
MSX	'9.99	CASSETTE		
IBM	'24.99	BOX		
AMIGA	'24.99	BOX		

PLUS

**PRIZES
TO BE WON IN
EVERY PACK!**

Manufactured and distributed under license from Epyx Inc. U.S. Gold Ltd. 273 Holland Way, Holland, Birmingham B64 5AE. Epyx is a Registered Trademark to U.S. Gold. Not supplied by Microfilm.

Screens as seen on Commodore 64

EPYX®

